State of Florida

Department of Transportation

DISTRICT FOUR

APPENDIX 1
DISTRICT FOUR ITS MAINTENANCE STANDARD OPERATING PROCEDURE (SOP)

Transportation Systems Management and Operations (TSM&O) Device Maintenance Contract, District Four

Financial Project Number(s): 406795-7-72-01 and various

Proposal/Contract Number: E4X61

Intelligent Transportation Systems (ITS) Maintenance Standard Operating Procedures

Notes to Proposers

The Intelligent Transportation Systems (ITS) Maintenance Standard Operating Procedures (SOP) provided herein are for general reference only. Some of the procedures, protocols, and system information are based on current infrastructure and contract requirements. The new TSM&O Device Maintenance Contract will have new requirements, systems, and infrastructure. The Proposer shall refer to Request for Proposal (RFP) Exhibit A – Scope of Services and other procurement documents for detailed contractual requirements and other relevant information for the new Contract. This SOP shall be updated by the selected Contractor per requirements defined in the RFP Exhibit A – Scope of Services after the new contract begins.

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1. Intelligent Transportation Systems Maintenance Overview

The objective of maintenance services is to ensure continuous (24 x 7 x 365) system operation and functionality of all components of the Florida Department of Transportation District 4 (D4) Intelligent Transportation Systems (ITS). The Maintenance Contractor will be evaluated periodically based on performance requirements from the Contract. The Contractor may be required to perform new device and infrastructure installations as needed and requested by the DEPARTMENT.

The Contractor shall provide the ITS maintenance services as described in the Contract documents, 24 hours a day, 7 days a week and year-round for the term of the Contract.

The Contractor shall always maintain the staffing levels required in the Contract Scope to ensure services under the contract are met. The staff assigned by the Contractor shall be fully certified by the manufacturer on the deployed device model, qualified and trained to handle all required activities.

All labor, materials and incidentals required to execute and complete the maintenance requirements, include the following, but not limited to:

- Project Management / Contract Administration
- Inventory Control Documentation
- Device Documentation Management
- Diagnostics and Troubleshooting Work
- Technical Systems Support
- Routine and Periodic Maintenance
- Device Installations and Calibration
- Repairs and Parts Replacement
- Emergency Response Repair
- Software and Firmware Revision Maintenance
- Electrical Work: Inspection, Repairs, New Installation, and Grounding
- Fiber Optic Work: Inspection, Repairs, New Installation, Fusion Splicing,
- Terminations, OTDR / Fiber Testing
- Conduit Work: Repair, Replacement, Installation, Directional Boring
- Generators: Storage, Placement, Maintenance, Re-fueling
- Data and Communications Cabling
- Maintenance and Inventory Management System (MIMS)
- Fiber Management System: Fiber Trak
- ITS Facility Management (ITSFM)

1.1 Arterial Management System (AMS) Maintenance Services

Part of maintenance services includes performing maintenance on arterial infrastructure including but not limited to CCTV cameras; Arterial DMS (ADMS); Microwave Vehicle Detection Sensors (MVDS); Bluetooth based Arterial Travel Time System (BTTS); Portable Traffic Monitoring Stations (PTMS); and associated cabinets, communications devices, and system electronics both in the field and within the Transportation Management Centers. Arterial roadways include but are not limited to:

- Oakland Park Boulevard from University Drive to U.S. 1
- Sunrise Boulevard from S.R. 7 to U.S. 1
- Broward Boulevard from University Drive to U.S. 1

- S.R. 7 from Hallandale Beach Blvd to Commercial Boulevard
- U.S. 1 from Broward Boulevard to Oakland Park Boulevard
- University Drive from Florida's Turnpike (Homestead Extension) to Oakland
- Park Boulevard
- Hollywood Boulevard from Dykes Road to U.S. 1
- Pembroke Road from I 95 to U.S. 1
- Hallandale Beach Boulevard from S.R. 7 to the Intracoastal Waterway
- U.S. 1 from Hollywood Boulevard to the Miami Dade County line
- Griffin Road from University Drive to S.R. 7

Below is a map showing arterial networks. The map below is for general reference only. Communications network changes frequently due to construction projects.

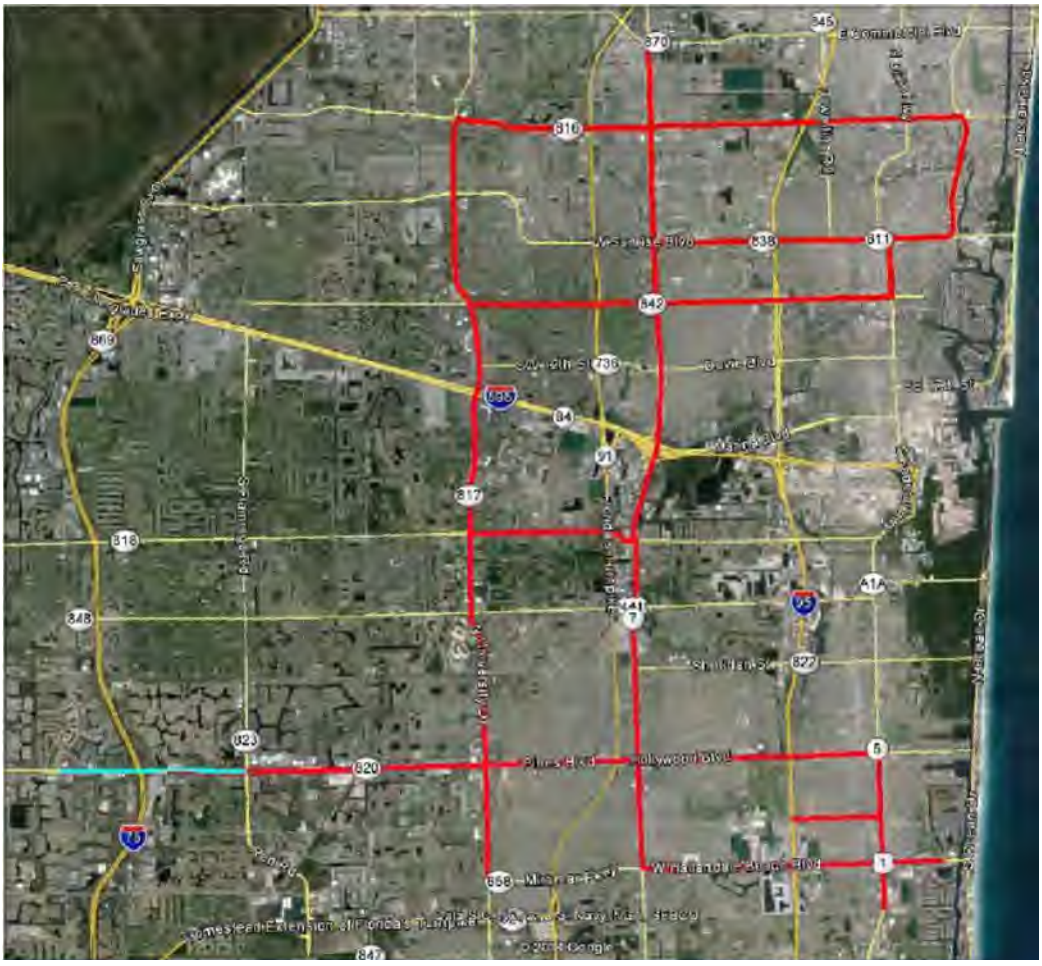


Figure 1: Map of Arterial Networks

#	Details
1.	The Intelligent Transportation Systems (ITS) Maintenance Contractor is the facility maintainer responsible for locating the facility per Sunshine 811 Call requirements up to and including the demarcation point described below.
2.	The demarcation point for maintenance responsibility of fiber optic cables, conduit and other related infrastructure shall be the closest fiber pull box or splice vault to the agencies traffic signal or ITS cabinet. The fiber optic cable and conduit infrastructure from that pull box or splice vault to the cabinet are to be maintained and located by the agency responsible for maintaining the cabinet.
3.	The allocation of fiber optic fibers and/or conduits as well as other related infrastructure being shared is detailed in this document. Fiber sharing and allocation information shall be updated each time additional fiber, conduit and/or other related infrastructure is shared between the Department and the County. Fiber sharing and allocation information shall also be utilized to identify the facility maintainer and the limits of the facility maintainer's responsibilities.
4.	Any damage to fiber optic cable must be assessed immediately. Therefore, the maintaining agency is required to have a Technician or contractor on site within one business day of a suspected fiber cut except in extreme situations. Once on site the Technician or Contractor will provide a damage assessment. Using the criteria below for a major repair, the maintaining agency will notify the other agency of the issue, the expected downtime and corrective actions needed. It is agreed upon that the fiber optic cable must be permanently repaired, or at a minimum, temporarily repaired within one additional business day after responding to a fiber cut. In extreme situations where a work around or fix cannot be performed within this time constraint, both the Department and the County will meet to discuss the needed repairs, available resources and a plan of action will be generated to fix the fiber in the most expeditious manner possible using the resources of both agencies if needed.
5.	For major repairs, the facility maintainer will be as documented in fiber sharing and allocation information. In the case of a major repair, within three (3) business days of the detection of the issue, both parties (FDOT and Broward County) agree to have a meeting to discuss available resources and required steps to correct the issue in a timely manner. The timeframe and responsibilities for the repair will be decided upon during this meeting.
6.	Understanding that device issues are far more frequently the cause of loss of communications to field devices, both agencies agree that initial troubleshooting will be performed by the agency identifying a communications issue to their field equipment. After technicians have responded to the location(s) impacted by the communications outage and determined the outage is not related to the communications devices, they shall inform the facility maintainer's representative that the issue is most likely attributed to the fiber optic cable leading to the cabinet. The facility maintainer shall investigate the issue and determine if it's a major repair situation as previously outlined above.
7.	This document in no way changes the existing maintenance arrangement between FDOT and Broward County. As the signal maintaining agency, the County shall continue to receive maintenance resources support as defined in their existing agreements with the Department.

Allocation of Fiber Optic Cables and/or Conduit(s) Within Shared Use Communications Facilities in Broward County

Facility Road Name	Limits of Facility Being Shared		FDOT Infrastructure			BCTED Infrastructure			Shared Fiber Details
	From	To	FOC SM	Pull Box	Conduit	FOC SM	Pull Box	Conduit	
U.S.1/Federal Hwy	S.R. 816/Oakland Park Blvd	S.R. 870/Commercial Blvd				12	x	x	Blue Buffer
U.S. 1/Federal Hwy	S.R. 842/Broward Blvd	U.S. 1/Federal Hwy (Sears)				24	x	x	Blue Buffer
U.S. 1/Federal Hwy	S.R. 838/Sunrise Blvd (Gateway)	NE 26th St				24	x	x	Orange Buffer
U.S. 1/Federal Hwy	NE 26th St	S.R. 816/Oakland Park Blvd	24			12	x	x	N/A
TMC (cable 1034)	Prospect Rd	S.R.845/Powerline Rd				24	x	x	Orange Buffer
S.R.870/Commercial Blvd	US 1/Federal Hwy	TMC				96	x	x	Red Buffer
S.R.870/Commercial Blvd	I-95	TMC				96	x	x	White Buffer
S.R.858/ Hallandale Beach Blvd	Three Island Blvd	US 441/S.R. 7	96	x	x				N/A
S.R.824/Pembroke Road	US 1/Federal Hwy	I95	96	x	x				N/A

Facility Road Name	Limits of Facility Being Shared		FDOT Infrastructure			BCTED Infrastructure			Shared Fiber Details
	From	To	FOC SM	Pull Box	Conduit	FOC SM	Pull Box	Conduit	
S.R.820/Pines Blvd	SW 145th/NW 142nd Ave	160th Ave/Dykes Rd	96	x	x	96	x	x	N/A
S.R.820/Hollywood Blvd	S 28th Ave	SW 148 Ave	96	x	x				N/A
S.R.818/Griffin Rd	S.R.7/US 441	University Dr	96	x	x	96	x	x	N/A
S.R.810/Hillsboro Blvd	I-95	S.R.91/Turnpike	48				x	x	GR/BR Buffers
S.R.7/US 441	SW 4th St	S.R. 870/Commercial Blvd	96	x	x				Orange Buffer
S.R.7/US 441	S.R.848/Stirling Rd	S.R. 842/Broward Blvd	96	x	x	96	x	x	N/A
S.R.7/US 441	S.R. 842/Broward Blvd	S.R. 870/Commercial Blvd	96	x	x				Blue Buffer
S.R.7/US 441	Filmore	S.R.848/Stirling Rd	96	x	x	96	x	x	N/A
S.R.7/US 441	S.R.858/ Hallandale Beach Blvd	Filmore	96	x	x	96	x	x	N/A
S.R. 870/Commercial Blvd	S.R.7/US 441	TMC				96	x	x	Black Buffer
S.R. 842/Broward Blvd	S.R. 817/University Dr	I-95 SB off ramp				96	x	x	Black Buffer

Facility Road Name	Limits of Facility Being Shared		FDOT Infrastructure			BCTED Infrastructure			Shared Fiber Details
	From	To	FOC SM	Pull Box	Conduit	FOC SM	Pull Box	Conduit	
S.R. 842/Broward Blvd	I-95 SB off ramp	NW 18th Ave				12	x	x	Blue Buffer
S.R. 842/Broward Blvd	NW 18th Ave	NW 15th Ave	24	x	x				N/A
S.R. 842/Broward Blvd	NW 15th Ave	SW 7th Ave				12	x	x	Blue Buffer
S.R. 842/Broward Blvd	SW 7th Ave	Andrews Ave				24	x	x	Blue Buffer
S.R. 842/Broward Blvd	Andrews Ave	NE 3rd Ave				12	x	x	N/A
S.R. 842/Broward Blvd	NE 3rd Ave	US 1/Federal Hwy				24	x	x	Blue Buffer
S.R. 838/Sunrise Blvd	S.R.7US 441	I 95 NB On Ramp	36	x	x				Orange Buffer
S.R. 838/Sunrise Blvd	I 95 NB On Ramp	NW 9th Ave				12	x	x	Blue Buffer
S.R. 838/Sunrise Blvd	NW 9th Ave	NW 7th Ave				24	x	x	Blue Buffer
S.R. 838/Sunrise Blvd	NW 7th Ave	NW 1st Ave	24	x	x				Blue Buffer

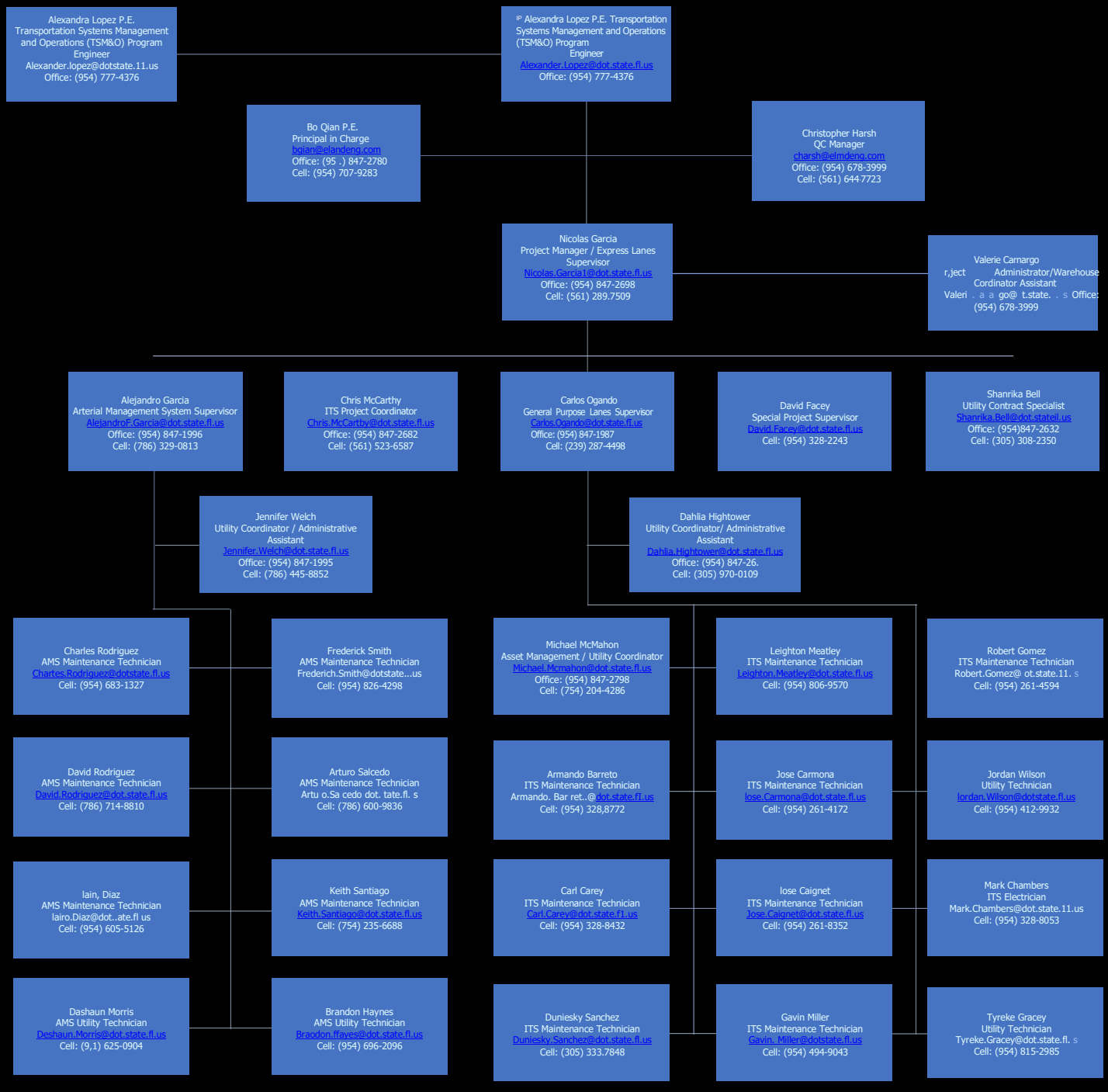
Facility Road Name	Limits of Facility Being Shared		FDOT Infrastructure			BCTED Infrastructure			Shared Fiber Details
	From	To	FOC SM	Pull Box	Conduit	FOC SM	Pull Box	Conduit	
S.R. 838/Sunrise Blvd	NW 1st Ave	Andrews Ave				12	x	x	Blue Buffer
S.R. 838/Sunrise Blvd	Andrews Ave	US 1/Federal Hwy (Sears)	24	x	x				Orange Buffer
S.R. 838/Sunrise Blvd	US 1/Federal Hwy (Sears)	NE 10th Ave	24	x	x	24	x	x	N/A
S.R. 838/Sunrise Blvd	NE 10th Ave	US 1/Federal Hwy (Gateway)				24	x	x	Blue Buffer
S.R. 817/University Dr	S.R. 842/Broward Blvd	S.R. 816/Oakland Park Blvd	96	x	x				Orange Buffer
S.R. 817/University Dr	S.R. 842/Broward Blvd	S.R. 838/Sunrise Blvd	96	x	x				Orange Buffer
S.R. 817/University Dr	S.R.822/Sheridan St	S.R.858/Miramar Pkwy	96	x	x	96	x	x	N/A
S.R. 817/University Dr	S.R.822/Sheridan St	Griffin RD	96	x	x	96	x	x	N/A
S.R. 817/University Dr	S.R.818/Griffin RD	Kolsky Blvd	96	x	x	96	x	x	N/A

Facility Road Name	Limits of Facility Being Shared		FDOT Infrastructure			BCTED Infrastructure			Shared Fiber Details
	From	To	FOC SM	Pull Box	Conduit	FOC SM	Pull Box	Conduit	
S.R. 817/University Dr	Kolsky Blvd	S.R.842/Broward Blvd	96	x	x	96	x	x	N/A
S.R. 817/University Dr	S.R.858/Miramar Pkwy	S.R.842/Broward Blvd	96	x	x	96	x	x	N/A
S.R. 816/Oakland Park Blvd	S.R. 817/University Dr	Rock Island Rd				12	x	x	Blue Buffer
S.R. 816/Oakland Park Blvd	Rock Island Rd	U.S. 441/S.R. 7	36				x	x	Orange Buffer
S.R. 816/Oakland Park Blvd	S.R.7/US 441	NW 18th Ave				12	x	x	Blue Buffer
S.R. 816/Oakland Park Blvd	NW 18th Ave	I 95 SB Off Ramp	36	x	x				N/A
S.R. 816/Oakland Park Blvd	I 95 SB Off Ramp	I 95 NB On Ramp				12	x	x	Blue Buffer
S.R. 816/Oakland Park Blvd	I 95 NB On Ramp	S.R. 845/NW 9th St	36	x	x				Blue Buffer
S.R. 816/Oakland Park Blvd	S.R. 845/NW 9th St	U.S. 1/Federal Hwy				12	x	x	Blue Buffer

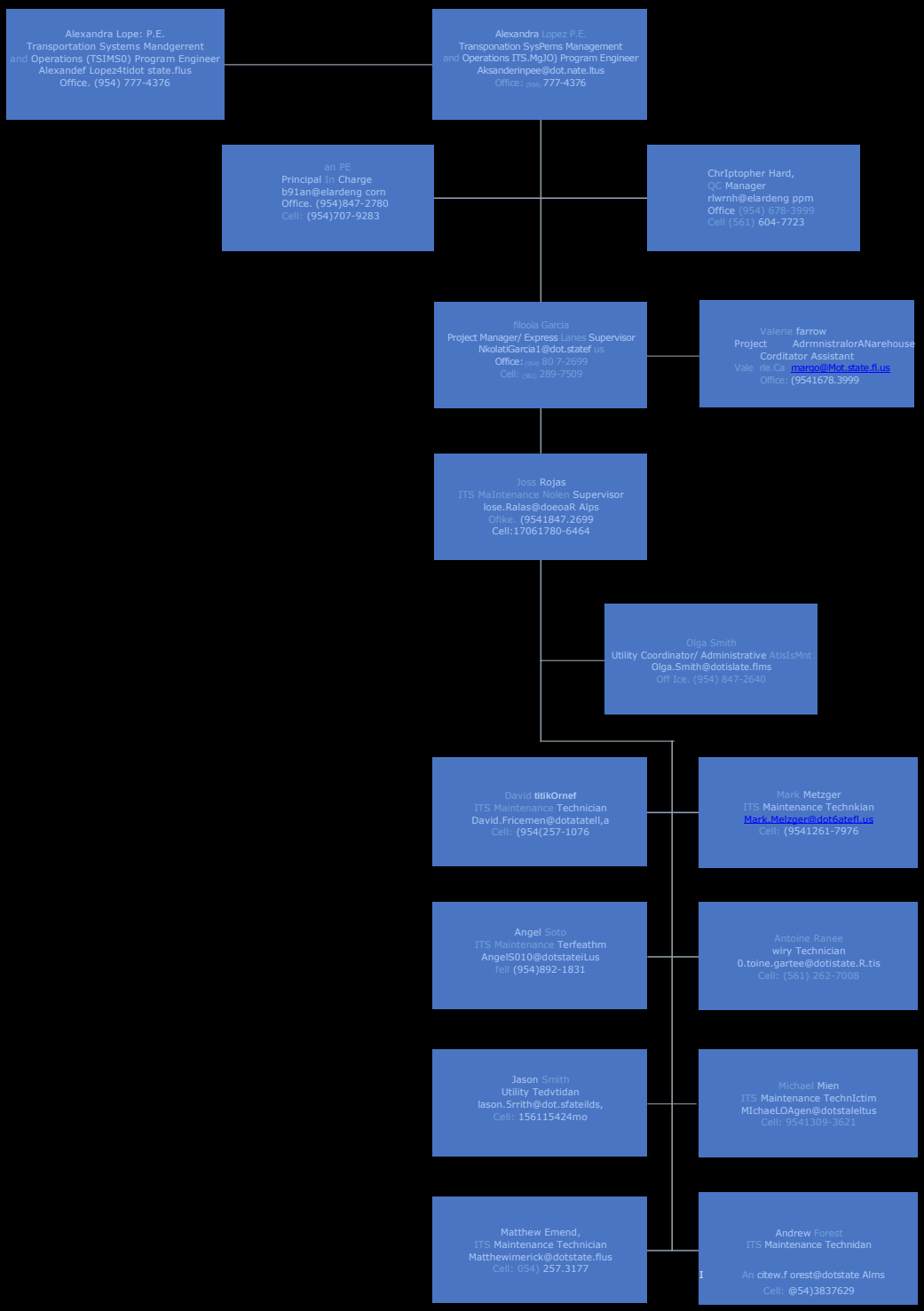
Figure 2: Allocation of Fiber Optic Cables and/or Conduits

2. Intelligent Transportation Systems (ITS) Maintenance Organization Chart

2.1 Broward ITS Maintenance



2.2 Palm Beach and N3C ITS Maintenance



3. Operation Schedule and Holidays

Refer to Request for Proposal (RFP) Scope of Services for operating schedule and response times.

4. Maintenance and Inventory Management System (MIMS)

4.1 MIMS Overview

The Maintenance and Inventory Management System (MIMS) is used to automate, centralize, and streamline the maintenance of ITS devices and respective SunGuide subsystems. MIMS was designed to facilitate the maximization of system uptime and to be the technological glue that ties together operations and maintenance staff.

MIMS automates the dispatch of Technicians for preventive and responsive maintenance activities, track maintenance activities and parts inventory in near real time and, provide representative reports for maintenance activities and inventory management.

MIMS is compliant with SunGuide software. MIMS allows Technicians to remotely communicate with SunGuide in near real time allowing the exchange of data related to trouble tickets, preventive maintenance tickets, GPS receiver position data (from the Technician's laptop) and parts inventory.

Figure 3 below shows ITS Maintenane Ticket General Flow Chart

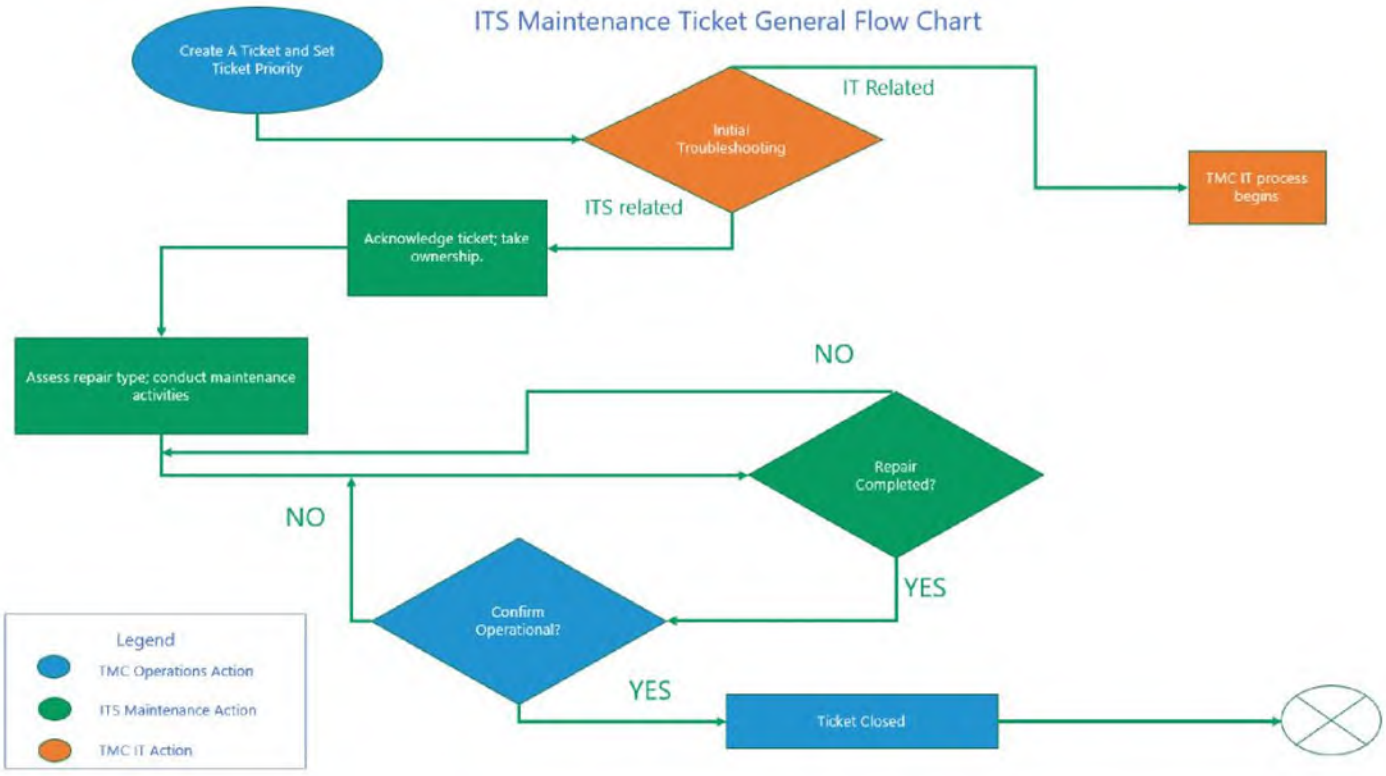


Figure 3: ITS Maintenance Ticket General Flow Chart

4.2 Diagnostic and Troubleshooting

Upon detection of an Intelligent Transportation Systems (ITS) device failure by the TMC, the TMC operation staff will proceed to identify the type of failure following the criteria on section "*Work Priority and Response Times*" and will issue a Maintenance and Inventory Management System (MIMS) trouble ticket to notify the Contractor.

4.3 Trouble Ticket Verification and Repair Types

a. Upon a ticket being created by the Operation staff, after initial troubleshooting by IT staff, Intelligent Transportation Systems (ITS) Maintenance Contractor Technicians will receive an email notification.
b. The Technician logs into Maintenance and Inventory Management System (MIMS) and is presented with a list of trouble tickets under the Trouble Ticket section.
c. The Technician selects a ticket with “Unconfirmed” status and presses the “Verify Ticket” button. The Contractor shall verify tickets and comply with their acknowledgment times.
d. A “Verify Trouble Ticket” window will open. The Technician will:
    - Select the available technicians according to the project and move them to the “Selected” side of the window by pressing the right arrow button.
    - Select repair type (Major/Minor) based on criteria from the Contract.
    - Press the “Ok” button to finalize the verification process.
e. If needed, the Contractor will adjust the repair type based on findings when the Technician arrives on site.

4.3.1 Minor Repairs

a. The Technician takes ownership of an "unresolved" trouble ticket from the Maintenance and Inventory Management System (MIMS) trouble tickets list. The status will change to "in-progress."
b. The Technician performs one or a combination of the following troubleshooting, reset, and reboot procedures:

- Reattach loose cable connections.
- Power reset for communications equipment (e.g., video encoder, terminal server, Ethernet switch, wireless radio, media converters).
- Power reset for electrical equipment (e.g., circuit breakers, main breaker, GFCI outlet, power connections, UPS, PDU).
- Reset/reboot CCTV camera and camera settings.
- Reset/reboot DMS controller.
- Reset/reboot MVDS units.
- Upload/upgrade software/firmware.
- Bypass UPS.
- Repair above-ground conduits.
- Clean fiber connector.
- Change UPS batteries.
- Clean CLD connectors.
- Reprogram CSU/DSU.
- Conduct pixel test for DMS.
- Change IP configuration for serial ports.
- Trim and reconnect corroded cables.
- Trim tree obstructions.
- Repair/terminate network cables.
- Adjust flashing beacons at Ramp Signal site.
- Reset Controller.
- Reset watchdog.
- Drill and tap hole for installing screws into the junction box.
- Reset Simple Network Management Protocol (SNMP) card.
- Check and reset alarm.
- Verify fiber connection.
- Perform any repair work not identified above or from the Contract which requires less than 4 hours of labor.

c. If the issue is not resolved, the Technician proceeds to replace the failed device(s) and/or component(s). Replacing or adjusting an MVDS unit aiming is considered a major repair, requiring the Contractor to submit a complete MVDS calibration and all other related documentation.
d. Once the device is repaired or replaced, the Technician contacts the TMC operation staff to confirm that the device is fully operational.
e. If the TMC confirms the device is operational, the Technician requests the operator to mark the ticket as “Operational.”
f. The Technician changes the status of the ticket to "Resolved" and enters detailed comments into the active ticket describing the completed activities.
g. Once tickets are marked resolved FDOT will proceed to “Close” the tickets. The Contractor will not close the tickets.

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4.3.2 Major Repairs

Upon identification of the need for a major repair, the Contractor shall follow diagnostic and troubleshooting procedures from the Contract for major repairs. Major repairs shall not commence until this written approval is issued unless it is an Emergency repair.

The Contractor shall prepare and submit a diagnostic report to the Department's Project Manager. The report shall include a damage assessment, cost estimates, and recommendations for repairs.

In urgent situations requiring immediate action, the Department may issue a pre-approval to commence work.

The Contractor:

- Must receive approval prior to being compensated for this work.
- Shall document any verbal approvals received for service/repair orders, including the date, time, reason, and the name of the Department Project Manager who issued and approved the work order.
- Is responsible for promptly reporting field findings and complying with the instructions and authorizations provided by the Department's Project Manager.

The Department's Project Manager is responsible for authorizing diagnostic services and repairs.

4.3.3 Work Priority and Response Times

Refer to RFP Exhibit A – Scope of Services for failure priority and various response times.

4.3.4 FDOT Third Party Damages

When third party accidents are noted during trouble tickets, the Contractor shall ensure to follow the below steps:

Initial Assessment	• Visit the site where the damage occurred. • Document the damage through photographs and notes. • Identify the type of FDOT property damaged (e.g., cabinets, CCTV, MVDS, load center, etc.).
Key Information	• Collect details about the incident (date, time, cause of damage). • Obtain the police report if applicable. • Identify any witnesses or additional reports that provide context to the damage.
Report to FDOT	• Report Third Party Damage to **TSM&O Maintenance Manager** who will then coordinate as necessary to document Incident and Claims within Department.
Damage Assessment	• Conduct a thorough inspection of the damaged property. • Measure and record the extent of the damage. • Assess the materials and labor required for repairs or replacements.
Prepare Major Repair Diagnostic Report to FDOT for Approval.	

4.4 Preventive Maintenance

Scheduled preventive maintenance involves regular system inspections and activities based on the District Four Intelligent Transportation Systems (ITS) Maintenance Standard Operating Procedures (SOPs) and manufacturer recommendations, as authorized by the Department's Project Manager. The Contractor shall conduct periodic inspections, clean equipment, and document all maintenance actions.

Preventive maintenance checklists provided by the Department must be updated by the Contractor and approved by the Department. The Contractor must follow the latest checklists and perform maintenance as directed by the Department and also per manufacturer recommendations to ensure warranty validity. The Contractor shall create the Monthly Preventive Maintenance Schedule and will enter it into the Maintenance and Inventory Management System (MIMS) once approved by the Department.

The Contractor may encounter minor and/or major device deficiencies on some of the devices while performing the preventative maintenance services; minor deficiencies, such as, a device cable being unplugged, tripped circuit breaker, graffiti removal, loose connector, shall be corrected as part of the preventative maintenance services whenever possible. The Contractor shall contact the Department's Project Manager to report major deficiencies.

4.4.1 Preventive Maintenance MIMS

a. The Technician logs into MIMS and is presented with a list of maintenance tickets under the Maintenance Tickets section.
b. The Technician selects a ticket with "Scheduled" status and presses the "Take Ownership" button, the status of the ticket will change to "In-progress" and the Technician will be the owner of the ticket.
c. The Technician performs each of the activities under the maintenance activities, once an activity is completed, the Technician marks the activity as "completed" and proceeds to perform other activities until the list of activities is fully completed.
d. The Technician updates the status of the preventive maintenance ticket to "Complete" via MIMS, when the service is completed. The Technician shall update the status of the preventive maintenance ticket to "Unable to complete" via MIMS when the service cannot be completed due to weather or other extraordinary circumstances.
e. Once tickets are marked "complete" FDOT will proceed to "Close" the tickets. The Contractor will not close the tickets.

4.4.2 Preventive Maintenance Activities per System

Refer to Preventive Maintenance checklist attached to this Standard Operating Procedures (SOP). The Contractor shall update the Preventive Maintenance checklists at a minimum with each SOP update, and also per Department’s direction and manufacturer recommendations.

5. Project Submittals

The Contractor shall comply with all submittal and official deliverable requirements from the RFP Scope of Services.

6. Inventory Control

The Contractor is required to use the Maintenance Information Management System (MIMS) to record and monitor all Intelligent Transportation System (ITS) assets. MIMS gives technicians access to see and update the parts inventory for ITS devices, streamlining the management and availability of these components.

ITS equipment or spare parts must be properly maintained and stored in the District Four Traffic Signal Management & Operations (TSM&O) Regional Transportation Management Center (RTMC), or other designated locations approved by the Department's Project Manager. Any spare parts or equipment not currently installed and operational should be housed in a storage area specifically dedicated to this project.

When parts or equipment are retrieved from a site following a service, they must be labeled with an equipment information tag. This tag should include critical details such as the date of service, the service location, the serial number of the parts installed and removed, the model number, a description of the problem with the part, the reason for its replacement, and the initials of the technician who performed the service. This process ensures accurate tracking and documentation of all equipment and parts throughout their lifecycle.

Before sending parts for repair or deciding to retire them, they must be tested to determine their condition and potential for continued use. This step helps in making informed decisions regarding the parts' future and maintaining operational efficiency.

Major system components such as cameras, detectors, DMS controllers, etc. should be labeled with a department-approved barcode standard, facilitating automatic identification, and tracking of inventory parts or equipment. This practice enhances the accuracy and speed of inventory management.

The Contractor is also responsible for maintaining and keeping a detailed inventory of all equipment and tools, ensuring that warranties remain valid for the entire duration of the contract. Preventive maintenance must be performed as specified by the equipment manufacturer within the prescribed intervals. Additionally, all electronic maintenance and measurement equipment must be calibrated by an approved Contractor, as per the specifications required by the equipment's guidelines. This adherence to preventive maintenance and calibration schedules ensures that all equipment operates effectively and within manufacturer specifications.

Maintain and have readily available an up-to-date inventory of all the equipment and/or parts. The inventory shall contain, but not be limited to, at a minimum:

- Manufacturer.
- Model number.
- Descriptive name.
- Manufacturer serial number.
- Current location and condition (new, used, or damaged).
- Available for use.
- Location of site, if applicable.
- Date of purchase.
- Date of retirement.
- Warranty status if applicable.

6.1 Storage Locations

Location Name	Address
Contractor Provided Locations	TBD
FDOT Broward Operations	5548 NW 9th Ave, Fort Lauderdale, FL 33309
FDOT Palm Beach Operations	7900 Forest Hill Blvd, West Palm Beach, FL 33413
Palm Beach Fire Station	1030 N Florida Mango Rd, West Palm Beach, FL 33409
FDOT TIMSO Center	3601 Oleander Ave, Fort Pierce, FL 34982
Palm Beach Vista Center	2300 Jog Rd, West Palm Beach, FL 33411

6.2 Warranty Information

When the Contractor is tasked with creating new assets in the system, the Contractor is responsible for entering available warranty information into the Maintenance Information Management System (MIMS). This step ensures that all warranty details are accurately recorded and accessible.

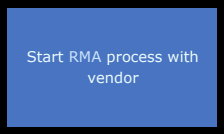
The Contractor is responsible for tracking manufacturer warranties and pursuing warranty repairs for device failures that fall under the manufacturer's warranty coverage. This involves coordinating closely with the Department’s Project Manager (or their designee) and the device manufacturer or reseller to ensure timely and efficient handling of warranty claims. Repaired equipment returned from the manufacturer should be retained in inventory as spare parts if it is not slated for immediate reinstallation.

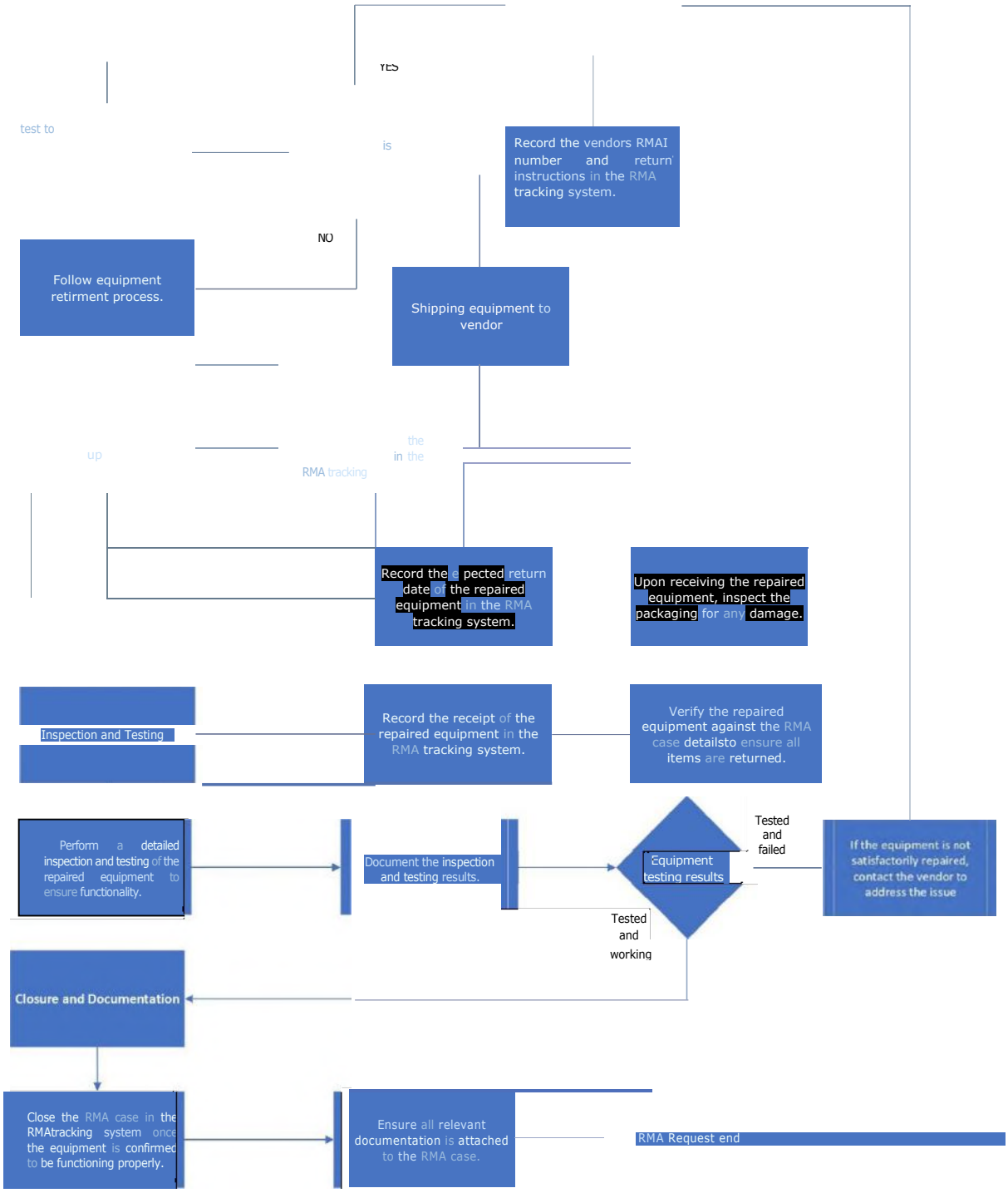
6.3 Return Merchandise Authorization (RMA)

#	Process	Details
1.	**RMA Request Initiation**	• Identify field equipment that was removed due to failure, confirm the fault, and determine if the unit is still under warranty. • Log the request into the RMA tracking system.
2.	**Contractor Selection and Request for RMA**	• Identify the appropriate vendor for the equipment repair. • Contact the vendor to request an RMA number and return instructions. • Record the vendor's RMA number and return instructions in the RMA tracking system.
3.	**Equipment Preparation**	• Ensure the equipment is properly packaged to prevent damage during shipping. • Include all necessary documentation, such as the RMA number, return instructions, and a detailed description of the issue. • Attach the internal RMA form to the equipment.
4.	**Shipping the Equipment**	• Ship the equipment to the vendor using the preferred shipping method. • Ensure the shipment includes the vendor's RMA number and any required documentation. • Record the shipment details, including the tracking number, in the RMA tracking system.
5.	**Monitoring and Communication**	• Monitor the shipment to ensure it arrives at the vendor's location.
6.	**Repair Process**	• Maintain communication with the vendor to receive updates on the repair status. • Document any additional information or requirements provided by the vendor. • Record the expected return date of the repaired equipment in the RMA tracking system.
7.	**Receiving Repaired Equipment**	• Upon receiving the repaired equipment, inspect the packaging for any damage. • Verify the repaired equipment against the RMA case details to ensure all items are returned. • Record the receipt of the repaired equipment in the RMA tracking system.
8.	**Inspection and Testing**	• Perform a detailed inspection and testing of the repaired equipment to ensure functionality. • Document the inspection and testing results.

#	Process	Details
		• If the equipment is not satisfactorily repaired, contact the vendor to address the issue.
9.	**Closure and Documentation**	• Close the RMA case in the RMA tracking system once the equipment is confirmed to be functioning properly. • Ensure all relevant documentation is attached to the RMA case. • Review the case for any outstanding issues and ensure they are resolved.

6.3.1 RMA Flow Chart




YES
test to
is
Record the vendors RMAI number and return instructions in the RMA tracking system.
NO
Follow equipment retirment process.
Shipping equipment to vendor
up
the
in the
RMA tracking
Record the e pected return date of the repaired equipment in the RMA tracking system.
Upon receiving the repaired equipment, inspect the packaging for any damage.
Inspection and Testing
Record the receipt of the repaired equipment in the RMA tracking system.
Verify the repaired equipment against the RMA case detailsto ensure all items are returned.
Perform a detailed inspection and testing of the repaired equipment to ensure functionality.
Document the inspection and testing results.
Equipment testing results
Tested and failed
If the equipment is not satisfactorily repaired, contact the vendor to address the issue
Tested and working
Closure and Documentation
Close the RMA case in the RMAtracking system once the equipment is confirmed to be functioning properly.
Ensure all relevant documentation is attached to the RMA case.
RMA Request end

7. Hurricane Response Action Plan

For the duration of hurricane season, whenever a storm warning or watch is issued for the Broward, Palm Beach, Miami-Dade, and/or Monroe County areas, the Maintenance Contractor will continuously monitor reports from the national weather service. Concurrently, all Intelligent Transportation Systems (ITS) field device sites and cabinets will be inspected and tested, and the maintenance staff will perform a system test with FDOT approval from the RTMC, to verify proper operations.

The Contractor shall be familiar with the Department's Emergency Response Plan (ERP) in Section 9, Strategic Hurricane Emergency Management Plan (SHEMP), and will work with the Department to provide the information respective to ITS maintenance prior to, during and post hurricane as called for in the ERP and SHEMP.

The Department will coordinate a meeting prior to a hurricane event to request a state of readiness. At this meeting, the maintenance supervisor will provide a working status of all ITS field devices, with a photo log if needed, of device sites that required special lock downs. The supervisor will also submit an up-to-date contact list with phone numbers for all primary and secondary contacts.

7.1 Pre-Storm Generators

During or prior to the ERP pre-hurricane event meeting, the Contractor will run each generator for a duration of $^{1}/_{2}$ hour under full load to assure proper performance. If any generators require repair, the Department will be notified within 1 hour of discovery to generate an emergency work order to authorize the Contractor to have the generator repaired.

Each generator's fuel and oil levels will be checked to assure they are full. The Department will have available a reserve of diesel fuel to maintain generator operation post-storm. The Contractor will have available 100 gallons of gasoline for the smaller gasoline generators.

The Contractor shall secure the refueling service for the permanent generators that have been deployed along the freeways within the project limit.

7.2 ITS System Devices

All Intelligent Transportation Systems (ITS) field device sites and cabinets will be inspected including securing sites and testing for proper operation (in conjunction with the TMC).

7.3 Spare Parts

The Contractor will submit the current inventory of spare Intelligent Transportation Systems (ITS)components to the Department. To comply with the Department's HRAP it is expected that a minimum of 10% spares of all ITS field components be in inventory prior to the storm. If the current inventory is less than 10%, the Contractor will request a work order be generated to authorize the purchase of the additional devices. Once authorized, the additional devices will be purchased as soon as possible.

Once the Contractor and the Department agree that preparations are complete as per this document and the Department HRAP with regards to ITS maintenance, the Contractor will continue to monitor all field devices on a regular basis until wind speed reaches 35 MPH; at which time the Department and the Contractor will take shelter from the storm.

7.4 Post-Storm MIMS Hurricane Application

Once the storm has passed and the wind speed is 35 MPH or less, the Contractor will contact the Department to obtain a status report of the field devices. Priority sites will be established, and technicians will be sent to document damage while using the Maintenance Information Management System (MIMS) Hurricane app

7.5 Intelligent Transportation Systems (ITS) System Device Restoration 7.6

Generators

For Generators in Broward County, the Department has deployed the underground power distribution and backup system. Perform daily inspection and ensure the power backup systems are in good operation conditions.

7.7 Site Inspection

Maintenance Information Management System (MIMS) Hurricane app will allow the department to create reports and track damages, labor and costs associated to each repair. Pictures can be attached to each repair in order to have necessary documentation.

8. Inventory Database/Facilities Management System

The Department is using the Intelligent Transportation Systems (ITS) Facility Management (ITSFM) system to support the long-term ITS asset and configuration management needs of the ITS Program statewide. The ITSFM compiles system asset information in a single, web-accessible repository, allowing the Department to collectively manage the entire system in a coordinated manner. The ITSFM is hosted/provided by the FDOT's Central Office to the Districts and other regional partners.

The ITS Maintenance Contractor shall use the ITSFM for inventory and facilities management purposes. The Contractor shall update ITSFM data used to inventory the ITS field equipment including, but not limited to, outside plant cabling, duct, splice points, terminations, field devices, and other field installed assets. After a maintenance service is performed, the ITS Maintenance Contractor shall make sure corresponding ITSFM records are updated per ITSFM Maintainer responsibilities. If the update requires additional ITSFM user privileges such as ITSFM Editor and Senior ITSFM Editor, the ITS Maintenance Contractor shall notify the Department promptly.

8.1 ITSFM

The Intelligent Transportation Systems Facility Management (ITSFM) serves as the statewide database to manage field assets, document system configuration, and as-built documentation. The District also uses maintenance management software that is specifically designed to manage maintenance activities; documents installed and spare assets; log technician response times and repair activities; and monitor the fiber optic network's performance to automatically generate outage notifications. Together, this suite of software applications allows the Department to manage the entire Intelligent Transportation Systems (ITS).

ITSFM and the other maintenance management software stores data redundant between each system; these data items include but are not limited to:

- Equipment sites,
- Equipment site components including fiber, communication, and electrical equipment, and
- ITS Devices.

FDOT is committed to having a single central repository for all ITS-related assets within the ITSFM. However, no one system can provide all the business process functionality to all users that require interaction with the ITS facilities data. Interfacing external systems to the ITSFM is necessary to end duplication of efforts, mismatched values in common data fields, and errant data conditions, thus supplying correct reporting of ITS assets for the processes that are dependent on this data. The District plans to deploy the ITSFM-to-MIMS interface developed by District Five for this purpose.

8.1.1 Database Management

The District is responsible for managing and maintaining the Intelligent Transportation Systems Facility Management (ITSFM) database. Asset changes to the system will be updated to the database as shown in the following table or as otherwise decided by the District. The District will use the statewide ITSFM as the **primary** database for storing asset records for field equipment and cables. The District's goal is to supply a highly correct and reliable database for use by the operations and maintenance staff.

The following table defines the entity responsible to maintain the database and within the required timeframe based on work type:

Work Type	Responsible	Timeframe
Routine maintenance and equipment changeouts	Maintenance technicians	Real-time
Fiber connectivity	Fiber optic cable editor	One-week
New Construction	Outside Plant editor	One-month

8.1.2 Minimum Equipment Requirements

The Intelligent Transportation Systems Facility Management (ITSFM) supports a wide range of Intelligent Transportation Systems (ITS) equipment currently in use by the Department. The following table defines the minimum requirements needed to manage the transportation management system:

Minimum Equipment Requirements	
Field Equipment Types	Classification
Cable and Conduit	
Fiber Optic Cables	Required
Fiber Optic Cable Slack Loop	Required
Fiber Optic Cable Splice Location	Required
Video Cable	Required
Data Cable	Required
Composite Cable	Required
Electric Cables	Required
Twisted Pair Copper Cable	Required
Conduit and Access Points	
Conduit Duct Bank	Required
Conduit Attributes	Required
Innerduct Attributes	Required
Access Points	Required
Support Structures	
Pole	Required
Utility Pole	Required
Cantilever	Required
Butterfly	Required
Overhead Span	Required
Mast Arm - Single	Required
Mast Arm - Double	Required
Pedestrian Pole	Required
2-post sign	Required
Equipment Sites	
Regional Transportation Management Center	Required
Transportation Management Center	Required when Applicable
Communication Facility Sites	Required
Electric Sites	Required
Utility Demarcation Sites	Required
ITS Equipment Cabinet Sites	Required
Signal Equipment Sites	Required
Toll Equipment Sites	Required when Applicable

Minimum Equipment Requirements	
Field Equipment Types	**Classification**
ITS Devices	
All ITS Equipment Types	Required
All Signal Equipment Types	Required when Applicable
Fiber Equipment	
All Fiber Equipment Types including but not limited to Ethernet Switch/Routers, Patch Panel, Modem, etc.	Required
Fiber & Communication Equipment	
All Communication Equipment Types including but not limited to ITS Device Controller, Radios, Terminal Servers, Media Converters, etc.	Required
Electric Equipment	
All Electric Equipment Types including but not limited to Uninterruptible Power Supply, Batteries, Surge Protection Devices, Power Supplies, Power Management Units, etc.	Required

9. Utility Coordination

9.1 Locate Tickets

The Maintenance Contractor shall become a member of the Florida Sunshine State One Call.

Intelligent Transportation Systems (ITS) Maintenance Contractor Utility Technician	• Responsible for identifying the underground location and delineating and marking on the ground of existing utilities, per the requests from Sunshine State One Call, CONTRACTOR Project Supervisor, or FDOT Project Manager or designee. • Assist the ITS Maintenance technician and electrician in performing the installing, maintaining, and repairing of ITS devices. • Document and photograph the work performed on all utility locating and daily activities. • Meet with the Utility Locates Requesting Party as necessary in the field to supplement marking ITS utilities.
	The utility locates shall include, but not be limited to, fiber optic cables, power cables, and composite cables that constitute DEPARTMENT ITS underground utilities.
Requesting Vendor	• Fully cooperate with all utility owners during activities, but not limited to, construction, installation or repair associated with maintenance activities. • Call Sunshine: One-Call a minimum of forty-eight (48) hours and a maximum of ninety-six (96) hours before any excavation work. • Responsible for coordinating and meeting with all utility companies having overhead or underground facilities in proximity to the VENDOR installations. • Responsible for determining and performing any needed sub-surface utility engineering (SUE) work.

9.2 Design Tickets

The following structured process is for creating folders, determining conflicts, and managing responses for design tickets requested by firms. This applies to personnel responsible for processing and managing design tickets.

#	Activity	Procedure
1.	**Folder Creation for Design Tickets**	• Create a main folder for each firm requesting information. • Within the main folder, create a new sub-folder for each design ticket received.
2.	**Determining Conflict or No Conflict**	• Open and review the project map sent in the email with the design ticket request. • Use the available FDOT as-builts to quickly determine possible conflicts.

#	Activity	Procedure
3.	**No Conflict Determination**	If it is clear there is no fiber issue on the project: • Send a "No Conflict" letter in PDF format to the person requesting information. • CC the Supervisor on the email.
4.	**Conflict Determination**	If there is a possible conflict: • Open the corresponding as-built map. • Locate the intersection(s) on the Project Map in the as built. • Print to PDF the section needed from the as-built, including the bore logs. • Ensure the print is in color and in landscape orientation. If there is a conflict: • Send a "Conflict" letter in PDF format to the person requesting information. • CC the Supervisor on the email. Attachments: o Project Map o Request letter (if sent) o Corresponding As-Built map

10. Construction Coordination

10.1 Final Inspections – Walkthrough

10.1.1 Purpose

This Standard Operating Procedures (SOP) outlines the steps to be followed for coordinating construction activities, specifically for final walkthroughs and cabinet access requests. This ensures that all processes are completed efficiently and consistently.

10.1.2 Scope

This procedure applies to all construction coordination activities related to final walkthroughs and cabinet access requests within the company.

10.1.3 Responsibilities

- **Construction Coordinator (ITS Maintenance Contractor)**: Ensures that all steps in this SOP are followed and communicates with relevant parties.
- **CEI (Construction Engineering Inspector)**: Provides necessary plans and documentation.
- **FDOT TSM&O Maintenance Project Manager**: Receives email requests and pertinent information for approval.

10.1.4 Procedure

10.1.4.1 Final Walkthrough Request

- Request should be sent a minimum of 7 working days in advance.
    - This will give the Construction Coordinator time to review the pertinent documents.

10.1.4.2 Preparation

- **Email TSM&O Maintenance Manager**: Send an email to the Maintenance Manager with the following details:
    - An estimate of how long the walkthrough will take.
    - The FDOT project number or construction contract number.
- Request Documentation:
    - The ITS Project Coordinator (ITS Maintenance Contractor) will ensure all pertinent documentation is requested and received.
- CEI's Deficiency List:
    - Verify all work has been completed per plan, spec, and TSP.
    - Verify all testing has been completed.
    - Verify that the CEI's deficiency list has been completed before the walkthrough.

10.1.4.3 During Walkthrough

- Conduct Walkthrough:
    - Perform the walkthrough, ensuring to check the work against the plans, spec, and TSP.
    - Take pictures.

10.1.4.4 Post-Walkthrough

- Compile Deficiency List:
    - Create a comprehensive list of deficiencies observed during the walkthrough.
    - Include pictures and relevant specifications or codes for each deficiency.
    - Send the Deficiency List to FDOT TSM&O Maintenance Project Manager.

10.2 Cabinet Access Request

10.2.1 Preparation

- Estimate from CEI or Contractor requesting access:
    - The ITS Project Coordinator will ask the CEI or Contractor for an estimate of how long it will take to complete their tasks related to cabinet access.
- Email FDOT TSM&O Maintenance Project Manager:
    - The ITS Special Project Coordinator will send an email to FDOT TSM&O Maintenance Project Manager with the following information:
        - The project number (#).
        - The purpose of the request.
        - An estimate of the time it will take to complete the request.
- Documentation
    - Emails: Maintain records of all emails sent to and received for request.
    - Monthly Summary: record all requests monthly for the bi-weekly meetings.

10.3 Final Acceptance Process

Upon receiving final acceptance from Construction, the ITS maintenance contractor will be taking over maintenance responsibilities for the Preventative Maintenance and Repairs of ITS devices within the given area. Contractor must ensure they have all the necessary documentation so that they can adequately perform the Maintenance contractual services.

10.3.1 Necessary Documentation

Upon Final Acceptance the Maintenance Contractor must confirm that they have received the below items. If any items are missing or pending from this list, they must inform the TSM&O Maintenance Project Manager:

- As-Build Plans.
- IP Schema for project.
- Keys if Cyberkeys were not installed.
- Spare Parts (if required by project).
- Warranty Information.
- Device Credentials.

10.3.2 Inventory

Once the project has been taken over by the Maintenance Contractor, it will be the contractors' responsibility to do a field inventory. In this inventory he must capture:

- Brand
- Model

- Serial number
- Location

Once information has been gathered in the field, it will then be added into the Maintenance and Inventory Management System (MIMS) tracking system. An MT number will be assigned to the ITS Devices and a technician will need to go back to the field to install the Inventory Tag. The Maintenance Contractor will need to provide a Work Estimate to capture the effort needed to accomplish this field task.

11. Smart Work Zones (SWZ)

11.1 Overview

In 2016, Florida had the second highest number of fatal traffic crashes in work zones in the nation. Workers were present in 35 percent of all fatal crashes and 44 percent of crashes resulting in serious injuries. According to 2016 to 2018 statewide crash data, Florida experienced 10,000 work zone-related crashes, including 193 fatalities and 1,296 severe injuries. A considerable percentage of these crashes were angle and rear-end crashes, 36 percent, with the following contributing factors:

- Back of queue.
- Failure to follow the speed limit.
- Lack of traffic control at the lane merge.
- Limited line of sight.

To reduce crashes in work zone areas, current FDOT practices include:

- Enforcing traffic laws within the work zone area.
- Public awareness and education regarding work zone safety.
- Enforcement to strategically address drivers' behaviors, locations, and conditions most common or hazardous in speeding-related crashes.
- FDOT is developing an Action Plan to provide guidance for implementing Smart Work Zone (SWZ) technologies in the work zones in Florida for improving safety and enhancing mobility. The Action Plan will be followed by the development of new standards.

FDOT leverages Intelligent Transportation Systems (ITS) and Connected and Automated Vehicle (CAV) applications to create SWZ projects. The SWZ technologies will be tested on resurfacing, construction, or widening projects using CAV and ITS applications. An evaluation of deployed technologies will be conducted to estimate the potential benefits of the SWZ, and develop lessons learned and documents to scale this concept on future construction projects.

11.2 Smart Work Zone Request

Upon receiving a Smart Work Zone (SMZ) request from the Department, the maintenance team shall go over the requested areas and equipment to identify the field conditions and available SWZ equipment to determine what would be the best option for each site. Currently the department has various SWZ equipment available to them including:

- Solar Trailers (with wireless communication)
- Solar CCTV Cameras (with wireless Digital Barriers)
- Power dependent CCTV Cameras (with wireless Digital Barriers)
- Solar Blue Toad (with wireless communication)
- Power dependent Blue Toad (with wireless communication)

11.2.1 Field Criteria

Each Smart Work Zone (SWZ) is unique and has different needs. FDOT does not always have existing infrastructure in the area, but in many cases the County or even City does have infrastructure in the area and will allow FDOT to use their infrastructure on a temporary basis, so that traffic flow and incidents can be tracked and mitigated accordingly.

When reviewing SWZ there are usually 3 main constraints that need to be identified for installation:

1. Is there existing available infrastructure that can be used to install requested devices? This ranges from available Right-of-Way (ROW) space to deploy a trailer, all the way to existing concrete pole, aluminum poles, existing Mast arms, service poles etc.
    a. Does FDOT have any existing infrastructure in the area?
    b. Does the County have any infrastructure in the area?
    c. Does the city have any existing infrastructure in the area?
2. Is there available power in the area? FDOT has a limited amount of solar equipment, having power available in the proposed site is preferred.
    a. Does FDOT have power within the area? Is there an existing ITS site nearby?
    b. Does the County have power within the area? Is there an existing Traffic Signal cabinet nearby that FDOT would be allowed to use?
    c. Does the City have power within the area? Is there an existing Traffic Signal cabinet nearby that FDOT would be allowed to use?
3. Will an MOT be needed, and will the site be accessible during construction?

11.2.2 Work Estimate

After reviewing the requested Smart Work Zone (SWZ) sites, checking the Field Criteria, the maintenance team will put together a Work Estimate for approval from the FDOT Maintenance Project Manager. This cost estimate shall include technicians' hours, identify the proposed sites, equipment and infrastructure that will be used, any MOT cost and any materials needed for the installation.

Once work has been approved, the Maintenance team will schedule the work and coordinate with the SWZ team on installation dates.

11.3 3rd Party Coordination

The Safe Work Zone (SWZ) consultant shall be responsible for facilitating permissions and inter agency coordination with the 3rd party agencies and the Maintenance contractor. The Special Project Supervisor will also assist on the day-to-day coordination once the SWZ consultant has come to an agreement with the 3rd party agencies. Some of these agencies include but are not limited to:

- Construction Project:
    - Contractor
    - CEI
- Broward / Palm Beach County
- Cities: City of Boca, City of Fort Lauderdale, Port Saint Lucie etc.

12. Variable Speed Limit Signs (VSLS)

12.1 Overview

A Variable Speed Limit System (VSLS) has been deployed along S.R.-25/U.S.-27 in West Broward High School. The VSLS signs are programmed to follow a preset schedule to operate in conjunction with flashing school beacons deployed and managed by Broward County Traffic Engineering (BCTED) to alert motorists of reduced speeds in the school zone. The VSLS signs are managed by the Broward Regional Transportation Management Center (RTMC) and will operate not only for school hours but for special events at the school. At all other times, the signs will be programmed to display a higher speed limit to maintain free flowing traffic. CCTV cameras are also deployed to verify proper operation of the VSLS signs. These Standard Operating Procedures (SOP) address:

- VSLS SIGN MESSAGE SCHEDULING – Inputting the school year operating schedule.
- SCHEDULE UPDATES – Special events & updates.
- SETUP FOR DAILY OPERATION - Clock sync, verification, and logging of operation.

12.2 Procedures

12.2.1 VSLS Sign Scheduling

Broward County Traffic Engineering Division Special Projects Coordinator will provide the West Broward High School Flashing School Beacon (FSB) times and dates in an email to the Contractor at least two weeks prior to the school opening. If the school year schedule is not received in a timely manner, send a reminder to:

Ramoutar, Stephon [mailto:SRAMOUTAR@broward.org

The Intelligent Transportation Systems (ITS) Maintenance Manager, or other designated personnel will start calendar implementation. The designated person will enter the dates of operation and the times per the instructions provided in this section. Changes to the School Flashing Beacon schedule are not anticipated over the course of the school year. If any changes do occur, they will come from the Broward County Traffic Engineering (BCTED)contact.

12.2.2 Special Events Schedule

A Special Events schedule will also be emailed to the TMC manager at the beginning of the school year. These will generally be sports events, meetings, etc.

Note. BCTED does not operate the FSB for these Special Events, but this has no effect on the VSLS since each system operates independently.

Although significant changes are not anticipated over the course of the school year, West Broward High School may reschedule, add, or delete an event from their calendar. These changes will come via email from the BCTED contact, or the West Broward High School Principal, or Assistant Principal. The Intelligent Transportation Systems (ITS) Maintenance Manager, or other designated personnel will implement these events to the Variable Speed Limit Signs (VSLS) Schedule.

12.2.3 Quality Assurance

12.2.3.1 Daily Operation

After the Variable Speed Limit System (VSLS) has configured and tested for proper operation, daily operational monitoring will be turned over to the TMC's SunGuide operators.

If the VSLS experiences a malfunction or a failure, the SunGuide operator is to immediately inform the ITS maintenance supervisor for further action to take.

12.3 Example of School Year Schedule

ATTACHMENT A

EXAMPLE EMAIL OF SCHOOL YEAR SCHEDULE (provided by BCTED)

Example Program for: Zone # 3083 WEST BROWARD HIGH SCHOOL

TIME OF DAY (TOD) PLANS

PLAN A – NORMAL SCHOOL DAYS

WDY	6:40	ON	A
WDY	7:40	OFF	A
WDY	14:40	ON	A
WDY	15:10	OFF	A

Open the Excel VSLS Sign Schedule Worksheet file stored at.

The times given in this example for the FSBs. Enter them into the worksheet per instructions for Plan A Plan B (and Plan C if provided)

PLAN B – EARLY RELEASE DAYS

WDY	6:40	ON	B
WDY	7:40	OFF	B
WDY	12:40	ON	B
WDY	13:10	OFF	B

When setting up the Excel spreadsheet which is used to set up the Vanguard Day Plans, use these dates, specifically **Plan A** for the normal school year, and **Plan B** for the early release dates. **Plan C** for testing days is often provided

TOD PLAN PROGRAM DATES

A 8/23/10 – 6/9/11 NORMAL SCHOOL YEAR PLAN "A" TOD SCHEDULE –MON. THROUGH FRI.

B	9/23/10 – 9/23/10	EARLY RELEASE SCHOOL DAY WITH PLAN “B” TOD SHEDULE
B	10/28/10 – 10/28/10	EARLY RELEASE SCHOOL DAY WITH PLAN “B” TOD SHEDULE
B	01/21/11 – 01/21/11	EARLY RELEASE SCHOOL DAY WITH PLAN “B” TOD SHEDULE
B	04/01/11 – 04/01/11	EARLY RELEASE SCHOOL DAY WITH PLAN “B” TOD SHEDULE
B	04/28/11 – 04/28/11	EARLY RELEASE SCHOOL DAY WITH PLAN “B” TOD SHEDULE
B	06/09/11 – 06/09/11	EARLY RELEASE SCHOOL DAY WITH PLAN “B” TOD SHEDULE

EXCEPTION DATES – NO SCHOOL

When setting up the Excel spreadsheet and the Vanguard Day Plans, use these dates for the **NO**

09/06/10 – 09/06/10 HOLIDAY – LABOR DAY (FLOAT)
09/09/10 – 09/09/10 OFF
10/29/10 – 10/29/10 OFF
11/02/10 – 11/02/10 OFF
11/11/10 – 11/11/10 HOLIDAY–VETERANS DAY (ANNUAL)
11/24/10 – 11/26/10 OFF (11/24) & HOLIDAY– THANKSGIVING (FLOAT) – 3days
12/20/10 – 12/31/10 OFF – WINTER BREAK – 10 days
01/17/11 – 01/17/11 HOLIDAY – ML KING (FLOAT)
01/24/11 – 01/24/11 OFF
02/21/11 – 02/21/11 HOLIDAY – PRESIDENT’S DAY (FLOAT)
03/14/11 – 03/18/11 OFF – SPRING BREAK – 5 days
04/04/11 – 04/04/11 OFF
04/22/11 – 04/22/11 OFF
05/30/11 – 05/30/11 HOLIDAY MEMORIAL DAY (FLOAT)
06/10/11 – 08/20/11 OFF –SUMMER BREAK
ALL SATURDAYS AND SUNDAYS

When setting up the Excel spreadsheet and Vanguard Day Plans, use these dates and times for **SPECIAL EVENTS**. (This is

SPECIAL EVENTS – (NO FSB OPERATION)

02/02/11	6:30 - 9:30	SOFTBALL GAME
02/13/11	6:30 - 9:30	SOFTBALL GAME

AUGUST 2015

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
						1 No School
2 No School	3 No School	4 No School	5 No School	6 No School	7 No School	8 No School
9 No School	10 No School	11 No School	12 No School	13 No School	14 No School	15 No School
16 No School	17 No School	18 No School	19 No School	20 No School	21 No School	22 No School
23 No School	24 Normal Day	25 Normal Day	26 Normal Day	27 Normal Day	28 Normal Day	29 No School
30 No School	31 Normal Day					

SEPTEMBER 2015

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1 Normal Day	2 Normal Day	3 Test Day	4 Normal Day	5 No School
6 No School	7 No School	8 Normal Day	9 Normal Day	10 Normal Day	11 Normal Day	12 No School
13 No School	14 No School	15 Normal Day	16 Normal Day	17 Early Out	18 Normal Day	19 No School
20 No School	21 Normal Day	22 Normal Day	23 No School	24 Normal Day	25 Normal Day	26 No School
27 No School	28 Normal Day	29 Normal Day	30 Normal Day			

OCTOBER 2015

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1 Test Day	2 Normal Day	3 No School
4 No School	5 Normal Day	6 Normal Day	7 Normal Day	8 Normal Day	9 Normal Day	10 No School
11 No School	12 Normal Day	13 Normal Day	14 Normal Day	15 Normal Day	16 Normal Day	17 No School
18 No School	19 Normal Day	20 Normal Day	21 Normal Day	22 Early Out	23 No School	24 No School
25 No School	26 Normal Day	27 Normal Day	28 Normal Day	29 Normal Day	30 Normal Day	31 No School

NOVEMBER 2015

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1 No School	2 Normal Day	3 Normal Day	4 Normal Day	5 Test Day	6 Normal Day	7 No School
8 No School	9 Normal Day	10 Normal Day	11 No School	12 Normal Day	13 Normal Day	14 No School
15 No School	16 Normal Day	17 Normal Day	18 Normal Day	19 Normal Day	20 Normal Day	21 No School
22 No School	23 Normal Day	24 Normal Day	25 No School	26 No School	27 No School	28 No School
29 No School	30 Normal Day					

DECEMBER 2015

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1 Normal Day	2 Normal Day	3 Test Day	4 Normal Day	5 No School
6 No School	7 Normal Day	8 Normal Day	9 Normal Day	10 Normal Day	11 Normal Day	12 No School
13 No School	14 Normal Day	15 Test Day	16 Test Day	17 Test Day	18 Test Day	19 No School
20 No School	21 No School	22 No School	23 No School	24 No School	25 No School	26 No School
27 No School	28 No School	29 No School	30 No School	31 No School		

JANUARY 2016

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
					1 No School	2 No School
3 No School	4 Normal Day	5 Normal Day	6 Normal Day	7 Early Out	8 No School	9 No School
10 No School	11 Normal Day	12 Normal Day	13 Normal Day	14 Test Day	15 Normal Day	16 No School
17 No School	18 No School	19 Normal Day	20 Normal Day	21 Normal Day	22 Normal Day	23 No School
24 No School	25 Normal Day	26 Normal Day	27 Normal Day	28 Normal Day	29 Normal Day	30 No School
31 No School						

FEBRUARY 2016

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
	1 Normal Day	2 Normal Day	3 Normal Day	4 Test Day	5 Normal Day	6 No School
7 No School	8 Normal Day	9 Normal Day	10 Normal Day	11 Normal Day	12 Normal Day	13 No School
14 No School	15 No School	16 Normal Day	17 Normal Day	18 Normal Day	19 Normal Day	20 No School
21 No School	22 Normal Day	23 Normal Day	24 Normal Day	25 Early Out	26 Normal Day	27 No School
28 No School	29 Normal Day					

MARCH 2016

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1 Normal Day	2 Normal Day	3 Test Day	4 Normal Day	5 No School
6 No School	7 Normal Day	8 9 10 11 12 Normal Day	Normal Day	Normal Day	Normal Day	No School
13 No School	14 Normal Day	15 16 17 18 19 Normal Day	Normal Day	Early Out	No School	No School
20 No School	21 No School	22 23 24 25 26 No School	No School	No School	No School	No School
27 No School	28 Normal Day	29 30 31 Normal Day	Normal Day	Normal Day		

APRIL 2016

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
					1 No School	2 No School
3 No School	4 Normal Day	5 Normal Day	6 Normal Day	7 Test Day	8 Normal Day	9 No School
10 No School	11 Normal Day	12 Normal Day	13 Normal Day	14 Normal Day	15 Normal Day	16 No School
17 No School	18 Normal Day	19 Normal Day	20 Normal Day	21 Normal Day	22 Normal Day	23 No School
24 No School	25 Normal Day	26 Normal Day	27 Normal Day	28 Normal Day	29 Normal Day	30 No School

MAY 2016

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1 No School	2 Normal Day	3 4 5 Normal Day	Normal Day	Normal Day	6 Normal Day	7 No School
8 No School	9 Normal Day	10 11 12 13 14 Normal Day	Normal Day	Normal Day	Normal Day	No School
15 No School	16 Normal Day	17 18 19 20 21 Normal Day	Normal Day	Normal Day	Normal Day	No School
22 No School	23 Normal Day	24 25 26 27 28 Normal Day	Normal Day	Normal Day	No School	No School
29 No School	30 No School	31 Normal Day				

JUNE 2016

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
			1 Normal Day	2 Normal Day	3 Normal Day	4 No School
5 No School	6 Test Day	7 Normal Day	8 Normal Day	9 Early Out	10 No School	11 No School
12 No School	13 Normal Day	14 Normal Day	15 Normal Day	16 Normal Day	17 Normal Day	18 No School
19 No School	20 Normal Day	21 Normal Day	22 Normal Day	23 Normal Day	24 Normal Day	25 No School
26 No School	27 Normal Day	28 Normal Day	29 Normal Day	30 Normal Day		

Normal School Days

	12:00 - 6:10	6:10-6:20	6:20 - 6:30	6:30 - 7:40	7:40 - 7:50	7:50 - 8:00	8:00 - 2:20	2:20 -2:30	2:30 - 2:40	2:40 - 3:10	3:10 - 3:20	3:20 - 3:30	3:30- 11:59
	Flashers OFF	Flashers OFF	Flashers OFF	Flashers ON	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers ON	Flashers OFF	Flashers OFF	Flashers OFF
	No School Event	Transition to SE	School Event	School Event	School Event	Transition to NSE	No School Event	Transition to SE	School Event	School Event	School Event	Transition to NSE	No School Event
Traff. Ops Sheet	3	4	1	1	1	2	3	4	1	1	1	2	3
N1	55	50	50	50	50	50	55	50	50	50	50	50	55
N2 S6 S7	55	50	45	45	45	50	55	50	45	45	45	50	55
N3 N4 S1 S2 S3	60	55	50	50	50	50	60	55	50	50	50	50	60
N5 N6	60	55	55	55	55	55	60	55	55	55	55	55	60
N7	55	55	55	55	55	55	55	55	55	55	55	55	55
S4 S5	60	55	45	45	45	50	60	55	45	45	45	50	60

RETURN TO TOP OF PAGE

Early Out Days

	12:00 - 6:10	6:10-6:20	6:20 - 6:30	6:30 - 7:40	7:40 - 7:50	7:50 - 8:00	8:00 - 12:20	12:20 -12:30	12:30 - 12:40	12:40 - 1:10	1:10 - 1:20	1:20 - 1:30	1:30- 11:59
	Flashers OFF	Flashers OFF	Flashers OFF	Flashers ON	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers ON	Flashers OFF	Flashers OFF	Flashers OFF
	No School Event	Transition to SE	School Event	School Event	School Event	Transition to NSE	No School Event	Transition to SE	School Event	School Event	School Event	Transition to NSE	No School Event
Traff. Ops Sheet	3	4	1	1	1	2	3	4	1	1	1	2	3
N1	55	50	50	50	50	50	55	50	50	50	50	50	55
N2 S6 S7	55	50	45	45	45	50	55	50	45	45	45	50	55
N3 N4 S1 S2 S3	60	55	50	50	50	50	60	55	50	50	50	50	60
N5 N6	60	55	55	55	55	55	60	55	55	55	55	55	60
N7	55	55	55	55	55	55	55	55	55	55	55	55	55
S4 S5	60	55	45	45	45	50	60	55	45	45	45	50	60

RETURN TO TOP OF PAGE

Testing Days

	12:00 - 6:10	6:10-6:20	6:20 - 6:30	6:30 - 7:40	7:40 - 7:50	7:50 - 8:00	8:00 - 11:20	11:20 -11:30	11:30 - 11:40	11:40 - 12:10	12:10 - 12:20	12:20 - 12:30	12:30- 11:59
	Flashers OFF	Flashers OFF	Flashers OFF	Flashers ON	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers ON	Flashers OFF	Flashers OFF	Flashers OFF
	No School Event	Transition to SE	School Event	School Event	School Event	Transition to NSE	No School Event	Transition to SE	School Event	School Event	School Event	Transition to NSE	No School Event
Traff. Ops Sheet	3	4	1	1	1	2	3	4	1	1	1	2	3
N1	55	50	50	50	50	50	55	50	50	50	50	50	55
N2 S6 S7	55	50	45	45	45	50	55	50	45	45	45	50	55
N3 N4 S1 S2 S3	60	55	50	50	50	50	60	55	50	50	50	50	60
N5 N6	60	55	55	55	55	55	60	55	55	55	55	55	60
N7	55	55	55	55	55	55	55	55	55	55	55	55	55
S4 S5	60	55	45	45	45	50	60	55	45	45	45	50	60

RETURN TO TOP OF PAGE

No School Days

For weekends and days with no school - NOTE: The signs show a constant speed all day with no changes

	12:00 AM						<..... Same speeds all day						>11:59 PM
	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF	Flashers OFF
	No School Event	No School Event	No School Event	No School Event	No School Event	No School Event	No School Event	No School Event	No School Event	No School Event	No School Event	No School Event	No School Event
Traff. Ops Sheet	3	3	3	3	3	3	3	3	3	3	3	3	3
N1	55	55	55	55	55	55	55	55	55	55	55	55	55
N2 S6 S7	55	55	55	55	55	55	55	55	55	55	55	55	55
N3 N4 S1 S2 S3	60	60	60	60	60	60	60	60	60	60	60	60	60
N5 N6	60	60	60	60	60	60	60	60	60	60	60	60	60
N7	55	55	55	55	55	55	55	55	55	55	55	55	55
S4 S5	60	60	60	60	60	60	60	60	60	60	60	60	60

Update this spreadsheet with the BCTED supplied dates and times and use it as the guide for setting up the VSLS signs.

12.4 Variable Speed Limit Sign Schedule Setup Procedure

12.4.1 General

Within the project area, 14 Variable Speed Limit System (VSLS) signs are installed in the northbound travel direction and 14 signs in the southbound direction.

The signs will be programmed to follow the sequence of operation illustrated in the Figures below. Signs are implemented in pairs; N1 in the diagram is implemented as two signs across from each other, as N1W and N1E with the suffix indicating the West or East side of the travel lanes. Both signs at a location will be programmed to display the same speed limit.

Note. Signs will first transition from 65 MPH to 55 MPH for a short period. Then, signs will transition to 45 MPH. This will be the speed profile for the times just before the Flashing School Beacon (FSB) is turned on (10 minutes), and for a short period after the FSBs are turned off.

The Time-of-Day plans are to follow the times given in the tables above.

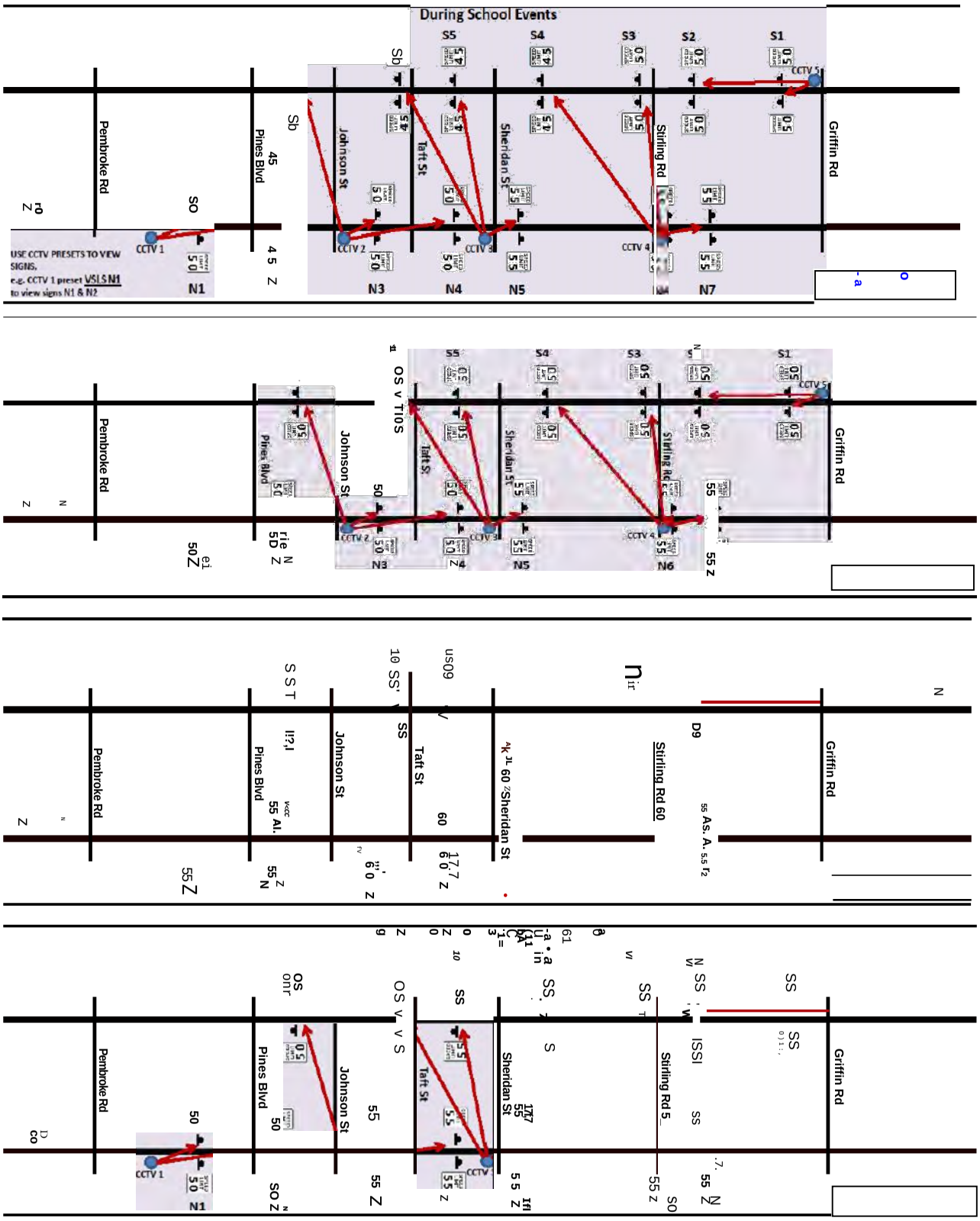


Figure 4: CCTV Presents to View Signs

"**Normal"** school days	Broward County Traffic Engineering (BCTED) will program the FSBs to follow their Plan A. The VSLS signs will be programmed to display the speed limits shown.
"Early Release" school days	BCTED will program the FSBs to follow their Plan B. The VSLS signs will be programmed to display the speed limits shown.
"Testing Days"	BCTED will program the FSBs to follow their Plan C. The VSLS signs will be programmed to display the speed limits shown.
"No School" days	FSB will be off for the entire day. All VSLS signs will be programmed to display the normal speed limit for the entire day as shown on Speed Limit MPH Schematic - sheet 3 above.

The following also are to be programmed using the **Scenario Management** feature:

- The event log, daily time sync sent from the RTMC.
- Event logging.
- Alarms/indications from the field.

The **Scenario Management** feature can also be used to program messages which will override the scheduled message. This is useful for one-time changes to the schedule or impromptu speed limit changes.

Note. Scenarios are real time operations which rely on communications from the TMC to the sign. If communications are lost, the scenario will not execute.

12.4.2 Creating the Speed Limit Messages

The Daktronics Vanguard program must be installed on the workstation. Else, contact IT support to be installed.

- Click the Vanguard icon on the desktop. The **Vanguard Central** application will open.

In the upper left,

- Click **Tools** tab and then → **Content Studio** icon.

When the Content Studio opens,

- Click the disk icon (or the large V for a drop-down menu) in the upper left to view and open the existing speed limit message files.

Confirm the following speed limit messages exist within the library for the US27/S.R.25 project: **45, 55, and 65**. If all is not in the library,

- Create the required Sign Messages and add them to the library.

To save the messages,

- Click the small icon in the upper left (or the large V for a drop-down menu).

For online help,

- Click on function key **F1**.

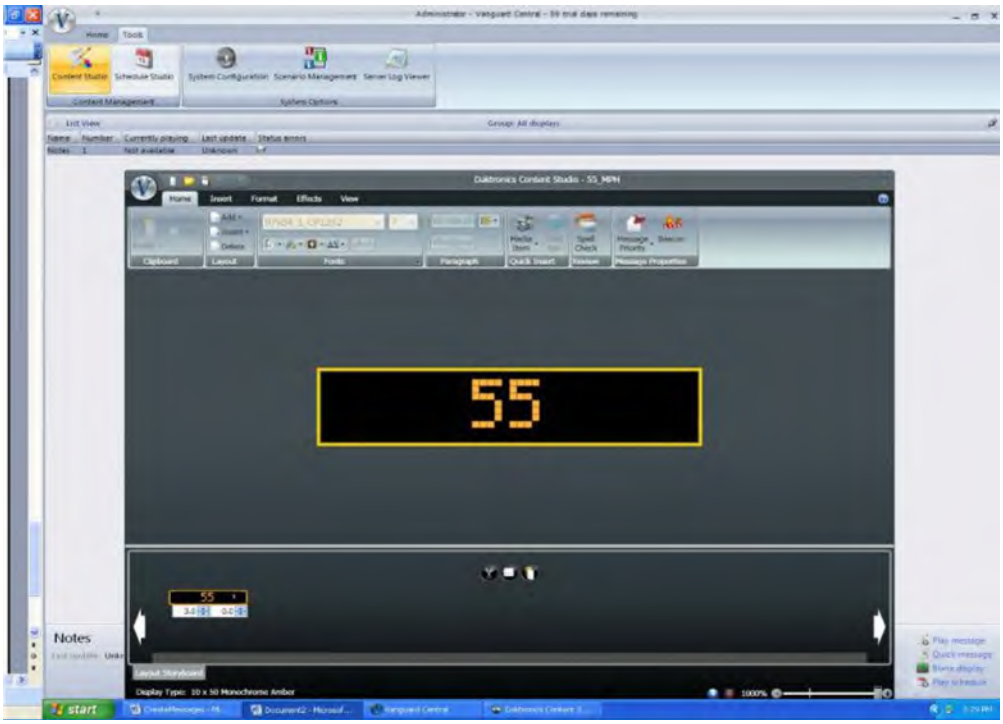


Figure 5: Content Studio for Creating Speed Limit Messages

After confirming all required speed limits are loaded into the library, close the Content Studio.

12.4.3 Creating the Sign Schedules

On **Tools** tab,

- Select Schedule Studio.

In the dialog box,

- Select Create new Schedule or Open existing schedule.

If opening an existing schedule, such as an existing **Base schedule,**

- Select it from the directory,
- Click it. It will then open.

Note. It is easier to create new schedules by opening and modifying an existing schedule, then saving it under a new name.

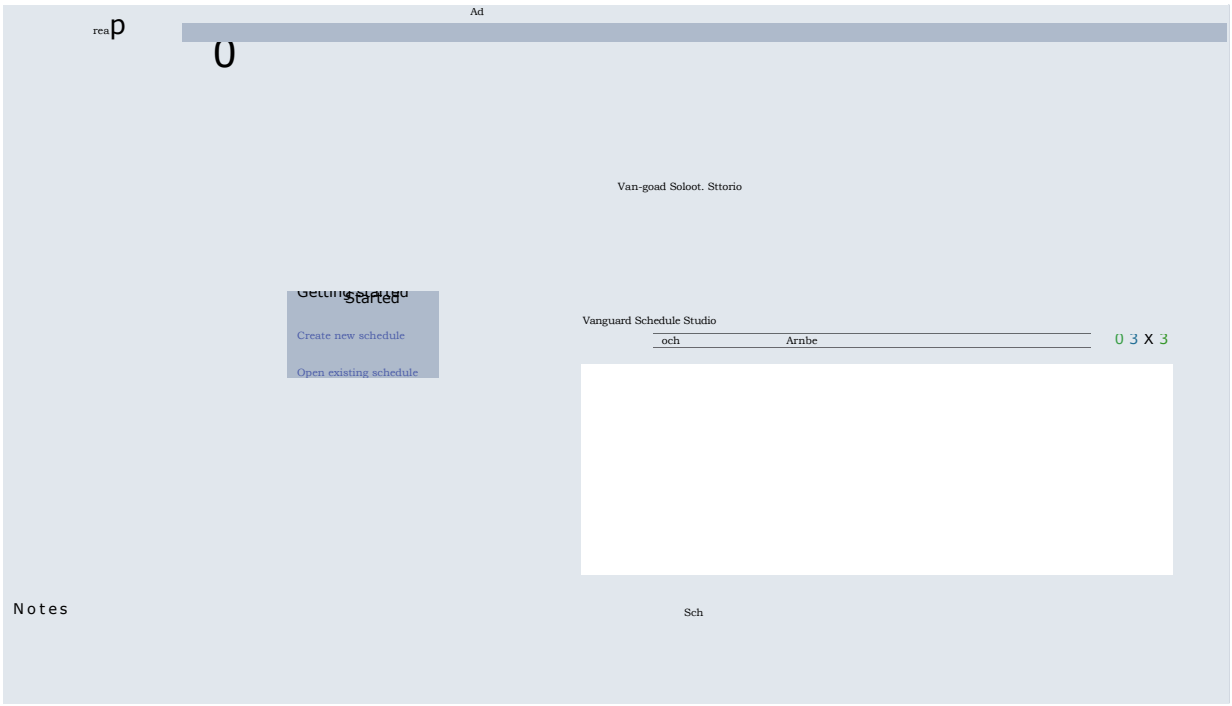


Figure 6: Vanguard Screen – Schedule Studio

After the calendar opens (Figure 7 below),

On the **Home** button:

- Click **Add Day Plan** button (upper left).

A **Set up Day Plan** dialog box will appear,

- Click **Add**.

From the **Select a message** directory,

- Select the message. The example below shows **45_MPH** as the message.

Within the Message Properties box,

- Set the **Start Time** and **End Time** for the message.

The example below shows the **45_MPH** message with a **Start Time** at **7:00 AM** and **End Time at 8:00 AM.**

Click **OK** → **Message Properties** box will close.

(The start and end times can also be set by grabbing and dragging the lines to the desired time on the "**Set up Day Plan > Messages**" box.)

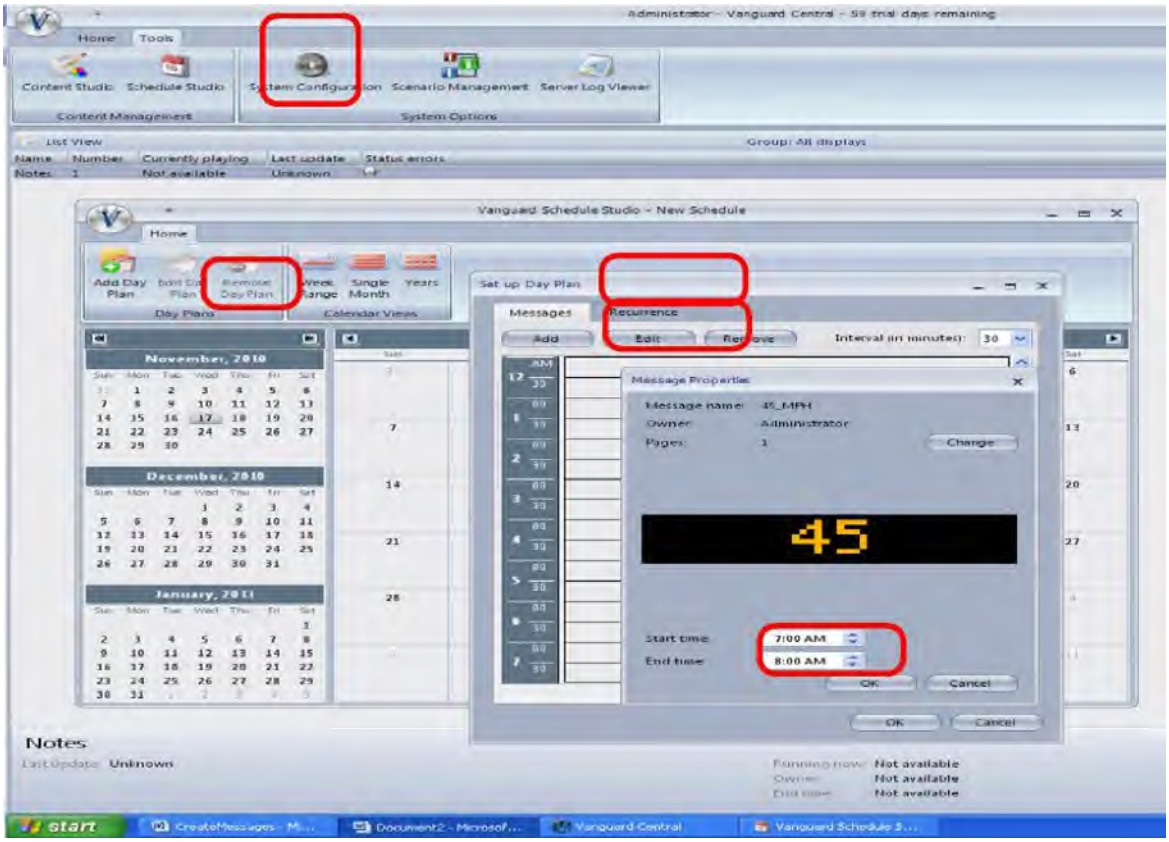


Figure 7: Vanguard Schedule Studio – Setting up a Day Plan

Proceed to add the messages (speed limits) and times to cover the twenty-four-hour period for the Day Plan.

For each Day Plan set the recurrence, by selecting the **Recurrence** tab.

For Day Plan 1, the **Messages** (speed limits), **Start Time** and **End Time** should be set in accordance with:

Table 1 - VSLS Sign Schedule for PLAN A – NORMAL SCHOOL DAYS

Recurrence should be set in accordance with the dates provided in the BCTED email for Plan A (example below).

A 8/23/10 – 6/9/11 NORMAL SCHOOL YEAR PLAN “A” TOD SCHEDULE –MONDAY THROUGH FRIDAY ONLY

Day Plans 2 through Day Plan 7 should be set in accordance with:

Table 2 - VSLS Sign Schedule for PLAN B –EARLY RELEASE SCHOOL DAYS.

Recurrence for each plan should be set in accordance with the dates provided in the BCTED email for Plan B (example below).

B 9/23/10 – 9/23/10 EARLY RELEASE SCHOOL DAYS WITH PLAN “B” TOD SHEDULE

B 10/28/10 – 10/28/10 EARLY RELEASE SCHOOL DAYS WITH PLAN “B” TOD SHEDULE

B 01/21/11 – 01/21/11 EARLY RELEASE SCHOOL DAYS WITH PLAN “B” TOD SHEDULE

B 04/01/11 – 04/01/11 EARLY RELEASE SCHOOL DAYS WITH PLAN “B” TOD SHEDULE

B 04/28/11 – 04/28/11 EARLY RELEASE SCHOOL DAYS WITH PLAN “B” TOD SHEDULE

B 06/09/11 – 06/09/11 EARLY RELEASE SCHOOL DAYS WITH PLAN “B” TOD SHEDULE

Day Plans should be set in accordance with:

Table 3 - VSLS Sign Schedule for EXCEPTION DAYS – NO SCHOOL.

Recurrence for each plan should be set in accordance with the dates provided in the BCTED email for Plan C (example below)

09/06/10 – 09/06/10	HOLIDAY – LABOR DAY (FLOAT)
09/09/10 – 09/09/10	OFF
10/29/10 – 10/29/10	OFF
11/02/10 – 11/02/10	OFF
11/11/10 – 11/11/10	HOLIDAY–VETERANS DAY (ANNUAL)
11/24/10 – 11/26/10	OFF (11/24) & HOLIDAY– THANKSGIVING (FLOAT) – 3days
12/20/10 – 12/31/10	OFF – WINTER BREAK – 10 days
01/17/11 – 01/17/11	HOLIDAY – ML KING (FLOAT)
01/24/11 – 01/24/11	OFF
02/21/11 – 02/21/11	HOLIDAY – PRESIDENT’S DAY (FLOAT)
03/14/11 – 03/18/11	OFF – SPRING BREAK – 5 days
04/04/11 – 04/04/11	OFF

04/22/11 – 04/22/11	OFF
05/30/11 – 05/30/11	HOLIDAY MEMORIAL DAY (FLOAT)
06/10/11 – 08/20/11	OFF –SUMMER BREAK
ALL SATURDAYS AND SUNDAYS	

Set additional Day Plans, as needed for the **SPECIAL EVENTS – (NO FSB OPERATION)**

Recurrence for each plan should be set in accordance with the dates provided in the BCTED email for Plan D (example below)

02/02/11	6:30 - 9:30	SOFTBALL GAME
02/13/11	6:30 - 9:30	SOFTBALL GAME

A month's plan would look like the example below

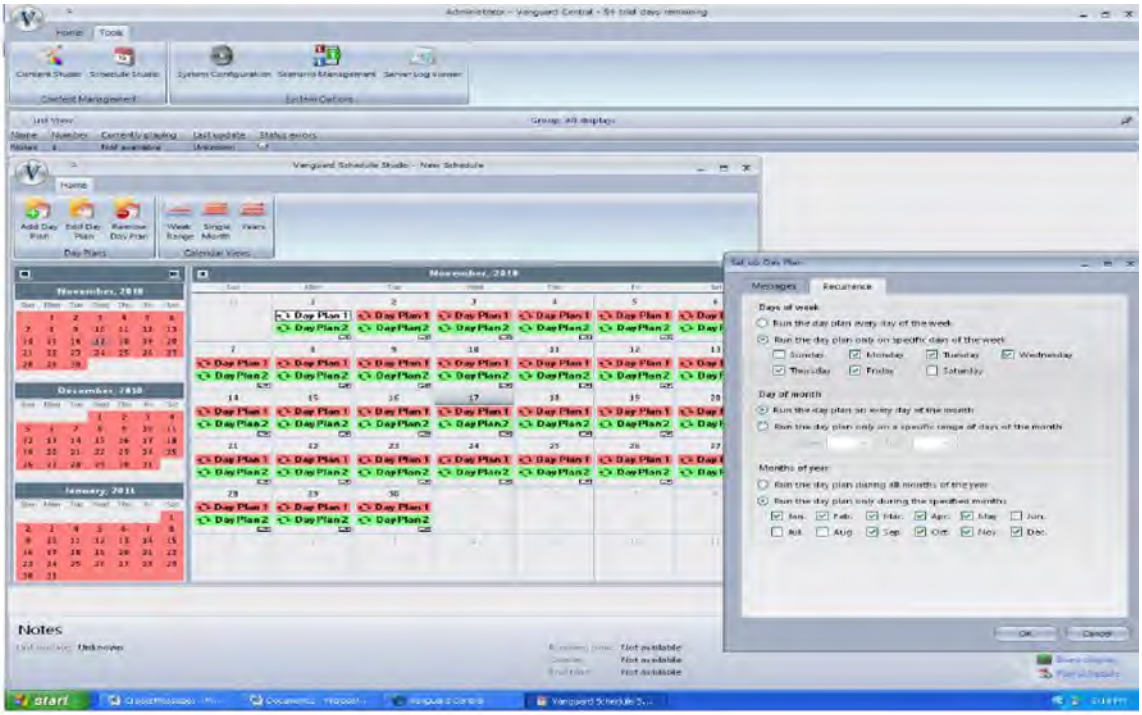


Figure 8: Example Day Plan with Recurrence

Note.

The Vanguard Scheduler has limitations of:

- 12 events per each day plan, and
- 20-day plans per schedule.

The 20-day plan limitation poses a problem with the BCTED schedule.

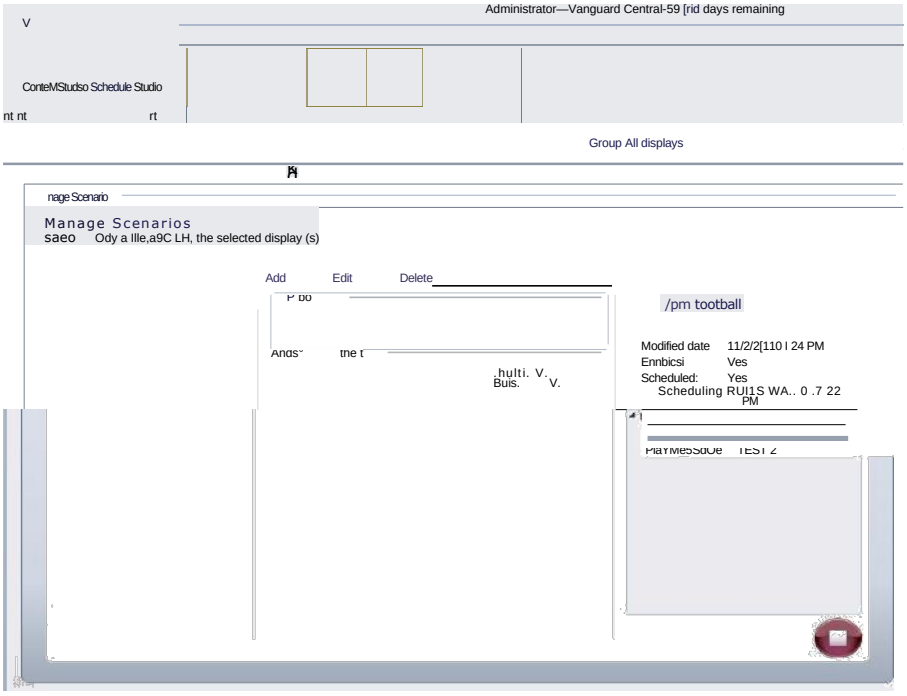
To overcome this limitation, separate the school year schedule into two parts according to the calendar year.

- Enter the school schedule for August through December and save it, for example as: **WBHS_AUG-DEC_2010.**
- Enter the school schedule for January through June and save it, for example as: **WBHS_JAN-JULY_2011**.

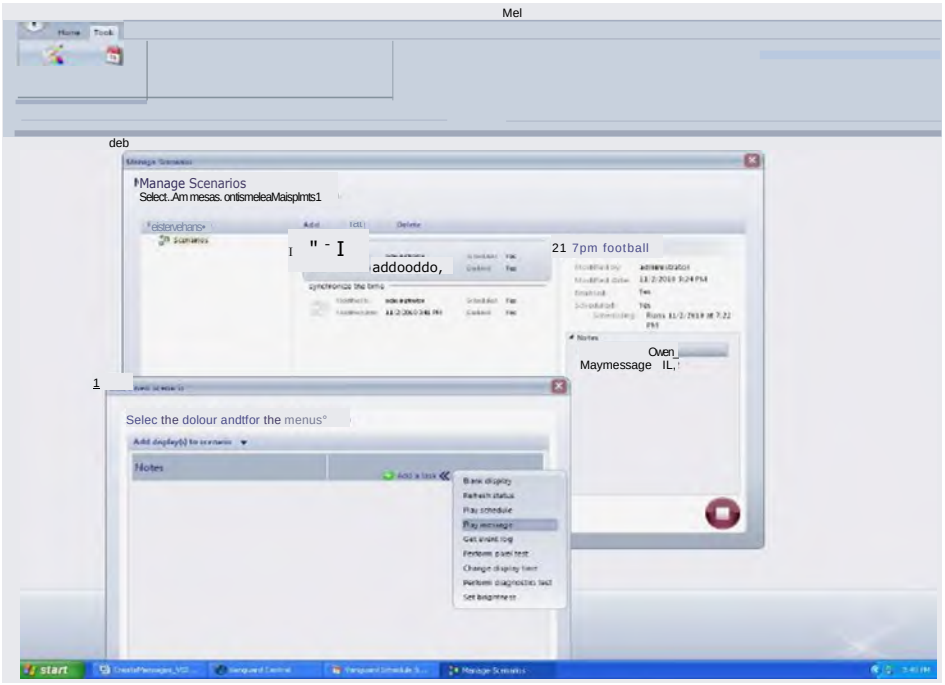
The transition from one schedule to the next will be set up with the **Scenario Management** menu.

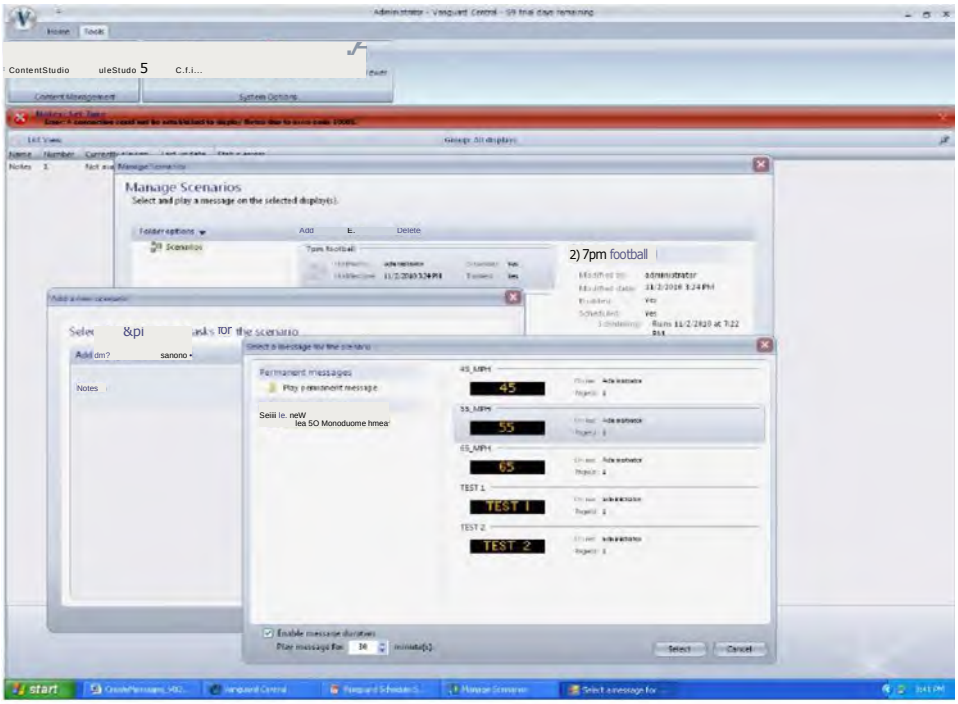
12.4.4 Using Scenarios

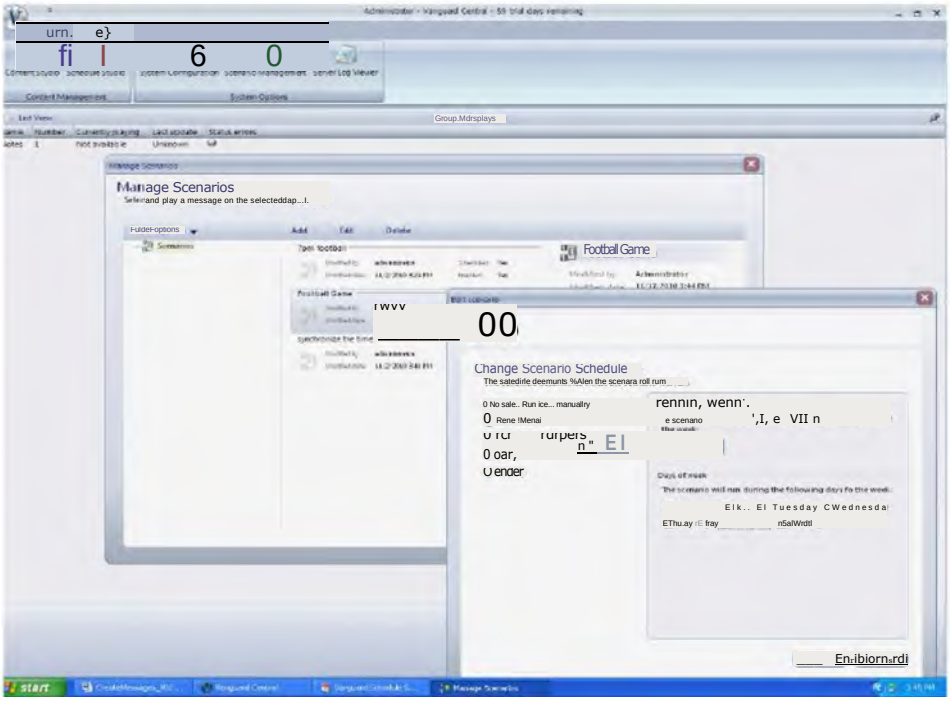
Exceptions to the schedule must be managed by the **Scenario Management** menu.



Play a scenario to add a special event.



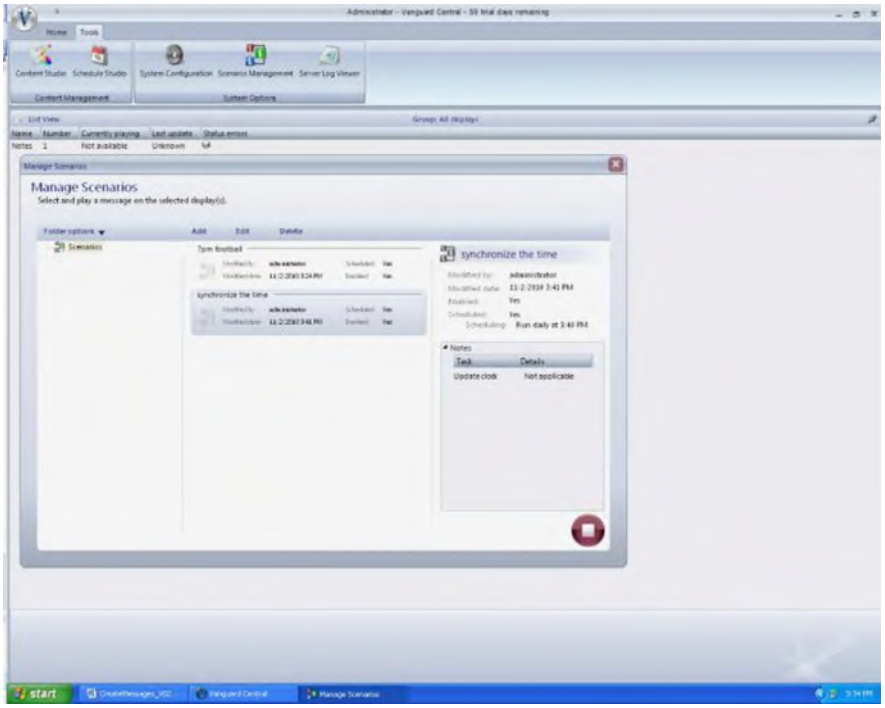




12.4.5 Time Sync, Logging, and Alarms Using Scenarios

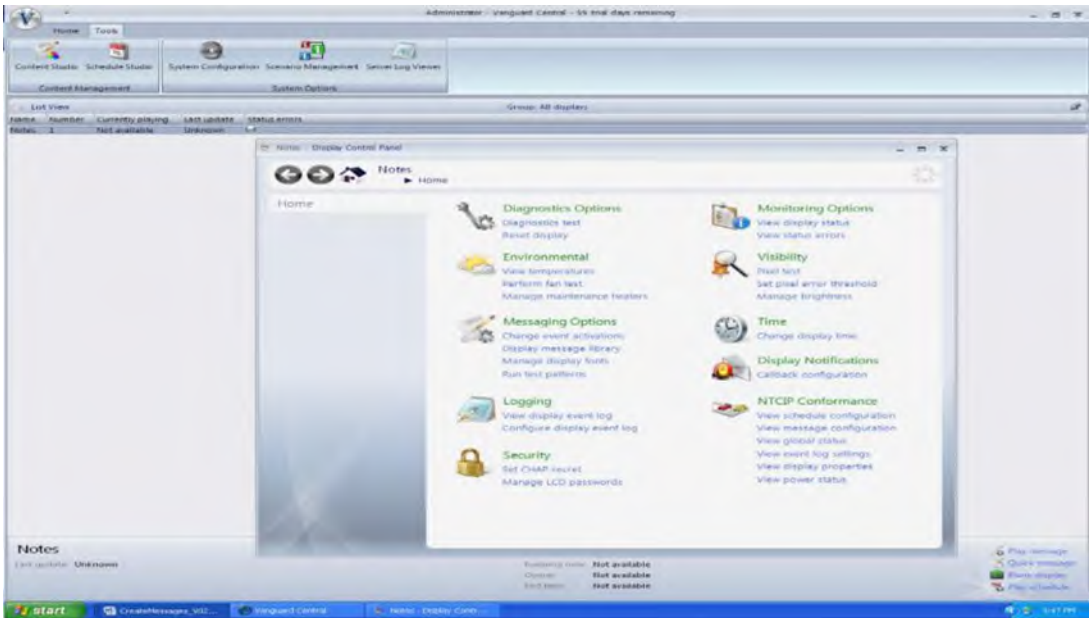
See screen shot below for synchronizing the time.

Click on the Scenario Management tab. On the Manage Scenarios box, click on synchronize the time.



12.4.6 Other Vanguard Functions

Note the "**Display Control Panel**" for other Vanguard functions, such as: **Diagnostic Test** and **Pixel Test.**



F1 Function key will bring up the help menu.

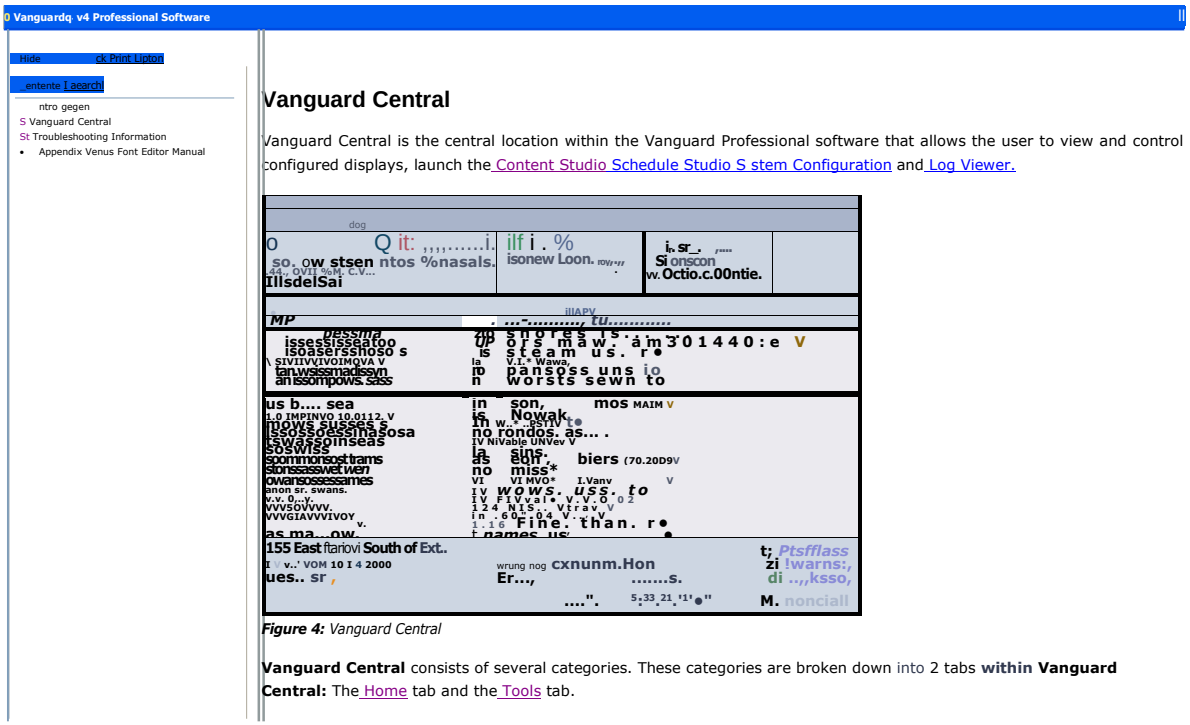
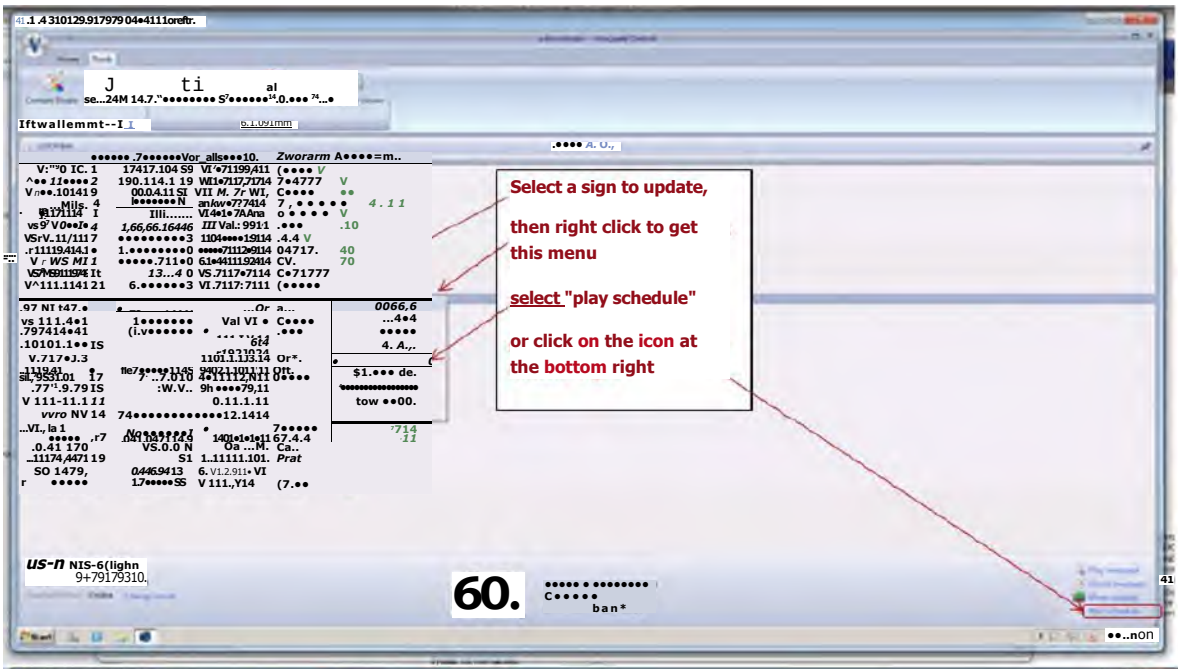
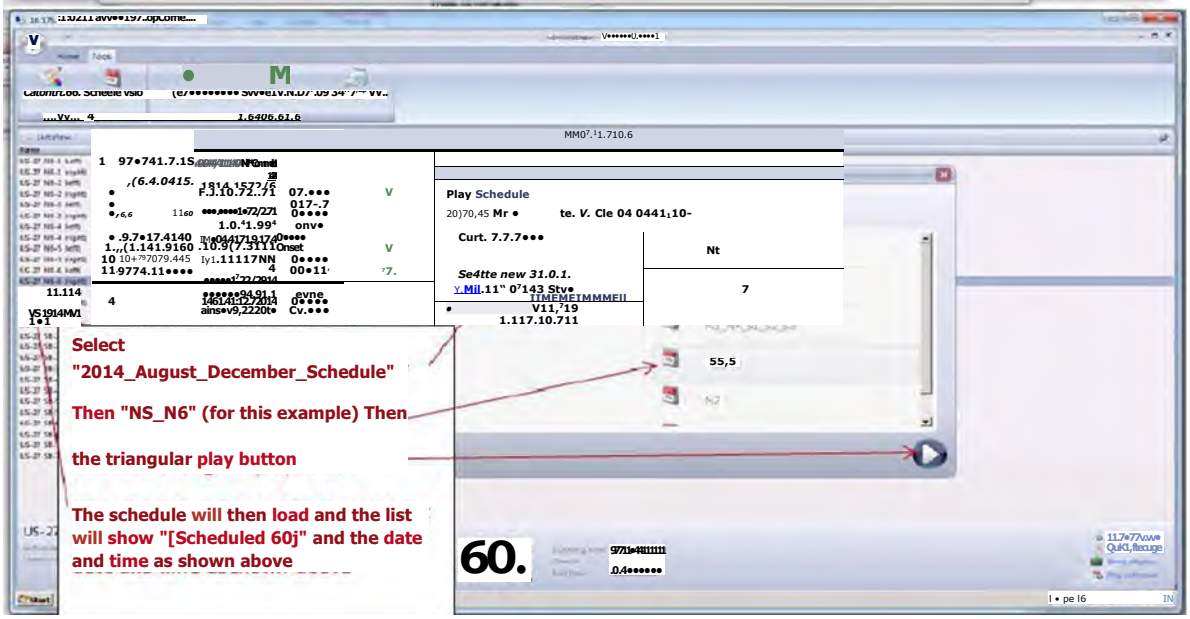


Figure 4: *Vanguard Central*

Vanguard Central consists of several categories. These categories are broken down into 2 tabs **within Vanguard Central:** The Home tab and the Tools tab.


Select a sign to update,
then right click to get this menu
select "play schedule"
or click on the icon at the bottom right
60.


Select "2014_August_December_Schedule"
Then "NS_N6" (for this example) Then
the triangular play button
The schedule will then load and the list will show "[Scheduled 60j" and the date and time as shown above
Play Schedule
60.

13. Glades Road/I-95 Diverging Diamond Interchange (DDI)

13.1 General Overview

To establish maintenance activities and repair procedures for the Glades Rd. Diverging Diamond Interchange (DDI) Traffic Lights Backup Power System, which supplies power to the east and west traffic lights on Glades Rd approaching I-95. Effective communication and coordination of maintenance activities and repair events are crucial to maintain the operability of the traffic light systems, given the interdependence of their components.

13.2 Call and Contact List

Phone numbers and email addresses are given below in order of escalation.

FDOT District 4 TSM&O Representatives

Name	Role	Phone Number	Email
TMC Operator	D4 Traffic Operations	(954) 847-2775	
Jose L. Rojas	ITS Maintenance Supervisor	(954) 847-2699	jose.rojas@dot.state.fl.us
Nicolas Garcia	Project Manager	(954) 847-2698	nicolas.garcia1@dot.state.fl.us
Christopher Harsh	Eland Vice President	(954) 847-1998	charsh@elandeng.com
Alexandra Lopez	TSM&O Program Engineer	(954) 777-4376	alexandra.lopez@dot.state.fl.us

City of Boca Raton Representatives

Name	Role	Phone Number	Email
Machavarapu Naresh	City Traffic Engineer	(561) 416-3387	nmachavarapu@ci.boca-raton.fl.us

13.3 Cabinets at East and West Intersections

Figure 9: Cabinets at East and West Intersections

13.4 Locations and Responsibilities

Location	FDOT Responsibility	City of Boca Responsibility
Glades at I-95 SB (west crossover)	Automatic Transfer Switch (ATS), Step-down Transformer, 600V High Voltage Service Circuit Breaker and Disconnect Switch, Pull Box and Conduit Carrying high voltage service power. Cabinet housing the UPS, concrete pole, and equipment inside the cabinet, e.g. UPS, batteries, etc.	Traffic signal and cabinet, FPL service
Glades at I-95 NB (East crossover)		
Glades at St. Andrews	Manual Transfer Switch (MTS), Step-down Transformer, 600V High Voltage Service Circuit Breaker and Disconnect Switch, Pull Box and Conduit Carrying high voltage service power.	Traffic signal and cabinet, FPL service
Glades at Town Center Mall		
Glades at Butts Road		
Glades at Renaissance Way		

Location	FDOT Responsibility	City of Boca Responsibility
Glades at Airport Rd		
Glades at FAU		

13.5 Repair Procedures

- If any incident disables the full operability of the traffic lights at the locations on section 13.4, a designee from the City of Boca Raton begins troubleshooting efforts, if the issue is power related the designee will proceed to next step, if it's not power related the designee will proceed with the repairs and no intervention from the FDOT Intelligent Transportation Systems (ITS) Maintenance Contractor will be necessary.
- The City of Boca Raton designer will troubleshoot to determine if the issue is commercial power and/or related to any other equipment/infrastructure maintained by the City. o If it's determined that the issue is related to FPL, the City of Boca Raton designer will reach out to FPL and will coordinate the repairs with FPL.
- If the issue is at one of the intersections equipped an ATS and in the event that the Automatic Transfer Switch (ATS) does not transfer automatically to the FDOT power backup system, the City of Boca Raton designee should restore power to the traffic light cabinet by manually switching to UPS power from the switch inside the traffic light cabinet, this will keep the intersection running on UPS power until the power issue is resolved
- If the issue is at one of the intersections equipped with a MTS, the designee should manually switch to the FDOT power backup system by activating the lever at the manual transfer switch.
- The City of Boca Raton designer should notify the District 4 Traffic Operations number on section 15.2, and send an email reporting the issue the FDOT representatives on the same section.
- District 4 Traffic Operations is responsible for notifying the ITS technician on-call and for providing the details received from the City of Boca Raton designer.
- The ITS technician should investigate the cause for the failure of the equipment and determine if the failure is related to a storm event, materials, or workmanship, supplied power, electrical and/or mechanical components, hardware, or software failures, etc. The diagnostic results shall define the type of repair needed to restore the device(s) to 100% functional status.
- The ITS Maintenance supervisor should prepare a Diagnostic Report with an estimate for the repairs and must send it to the FDOT Project Manager or designee for approval before performing any work. Once approval is received, the ITS Maintenance Contractor will proceed with the repairs.
- Once the repairs are completed and device is operational, the ITS technician from FDOT Maintenance will call the City of Boca Raton designee to confirm traffic lights operational status.
- FDOT representatives will notify via email the City of Boca Raton that the repairs have been completed and confirmed operational with City of Boca Raton designee.
- The ITS Maintenance supervisor should prepare a Final Repair Report with the cost of the repairs and must send it to the FDOT Project Manager or designer.

13.6 Preventative Maintenance

The FDOT Intelligent Transportation Systems (ITS) maintenance contractor will perform semiannual preventative maintenance at the Automatic Transfer Switch (ATS) locations, given the critical nature of the

system, the preventative maintenance service must be coordinated with the City of Boca Raton, and a designee from the city must be present.

13.6.1 UPS Cabinets

- Survey site for any damages and/or vandalism.
- Clear any vegetation growing on top of pull boxes or slab, apply herbicide.
- Visually check for any damage or vandalism to the cabinet and structure, including disconnects, conduits, etc. - Report if any damage is found.
- Check cabinet filter and replace if needed, if equipped with fans check and make sure is operational.
- Check all indicator lights on all devices for any abnormalities.
- Verify UPS battery level, perform a self-check test, replace battery if needed.
- Inspect switch and verify both fiber ports are linking - Report if not linking.
- Check all connectors and wire terminals are snug and tight.
- Vacuum and wipe clean any dust from all devices in and outside the cabinet.
- Spray cabinet with ant killer or wasp killer if needed.
- Check locking mechanism, lubricate if needed.
- Verify door sensors.
- Before leaving the site ensure all devices are up and running, make sure the cabinet is locked before leaving the site.

13.6.2 Power Service Point – Automatic Transfer Switch (ATS)

- Survey site for any damages and/or vandalism.
- Clear any vegetation growing on top of pull boxes or slab, apply herbicide.
- Visually check for any damage or vandalism to the ATS, transformer, structure, including disconnects, conduits, etc. - Report if any damage is found.
- Clean the disconnect and ATS enclosures.
- Check external conduits for rust, and spray paint if needed.
- Check ATS for alarms.
- Inspect all service point wiring, insulation, and connectors; look for cracks or deformation.
- Ensure service point concrete pad and surrounding area is clear of garbage and foliage.
- Apply pesticide if needed.
- Before leaving the site make sure ATS, transformer, disconnect enclosures are properly closed.
- ATS power transfer test must be coordinated with the City of Boca Raton and follow procedures in section 15.6.2.1.

13.6.2.1 Automatic Transfer Switch Power Transfer Test

- The FDOT ITS Maintenance supervisor will coordinate a date and time with the City of Boca Raton designee, the test must be done after rush hour to minimize impact on the public.
- The FDOT ITS Maintenance team will test the backup generator prior to the power transfer test.
- The City of Boca Raton designer will switch the traffic light cabinets to UPS power to keep the traffic lights running during the power transfer test.
- The FDOT ITS Maintenance Technician onsite will cut FPL power to the ATS to simulate a power outage. The ATS shall transfer to emergency power, this can be confirmed on the ATS display that shows the current power source.

    - If the ATS fails to switch to the emergency power source, the FDOT ITS Maintenance Contractor will initiate troubleshooting. Any subsequent repairs require approval from the FDOT Project Manager or their designer. This approval is contingent upon the submission and approval of a diagnostic repair report.
- The City of Boca Raton designer will confirm power input in the traffic light cabinets.
- The FDOT ITS Maintenance Technician onsite will restore FPL power to the ATS, the ATS shall transfer to normal power, this can be confirmed on the ATS display that shows the current power source.
- The City of Boca Raton designer will switch the traffic light cabinets back to normal power from the manual switch inside the traffic light cabinet.
- Before leaving the site the City of Boca Raton designer will confirm that the traffic light system is fully operational.
- Before leaving the site the FDOT ITS Maintenance Technician will confirm that the service point is back to normal and will ensure that the ATS and any other FDOT equipment is properly closed and locked.

14. Master HUB Monitoring Equipment Maintenance

14.1 General Overview

The goal of this procedure is to create a consistent and efficient approach to managing the troubleshooting, replacement, and repair of monitoring equipment at the master HUBs across the district. This ensures that all steps are clearly defined, communication flows smoothly between parties, and approvals are obtained promptly and correctly.

Master HUB buildings within the district are critical infrastructure points, equipped with multiple Closed-Circuit Television (CCTV) cameras and RoomAlert systems. These systems are actively monitored by the FDOT TSM&O IT staff, which is responsible for ensuring their operational integrity. The TSM&O IT staff also maintains the inventory and spare parts for non-Intelligent Transportation System (ITS) devices installed at these HUBs.

14.2 Master HUB Building Locations

Project	HUB Name	Corridor
Broward ITS Maintenance	Sheridan HUB	I-95
	Airport HUB (HUB 1)	I-95
	Hillsboro HUB	I-95
	I-75/I-595 HUB	I-75
	Miramar HUB	I-75
	Hillsboro & TPKE HUB	Hillsboro Blvd
	Hollywood HUB	I-95
	TPKE & I595 HUB (HUB 2)	I-595
Palm Beach ITS Maintenance	I-95 PGA Blvd, Palm Beach Gardens	I-95
	I-95 Atlantic Ave, Delray Beach	I-95
	I-95 Palmetto Park HUB	I-95
	I-95 Kanner Hwy, Stuart	I-95
N3C ITS Maintenance	I-95 Fellsmere Rd, Sebastian	I-95
	I-95 Okeechobee Rd, Fort Pierce	I-95

14.3 Procedures

14.3.1 Notification of Device Failure

The IT Department identifies a device failure and promptly notifies the Contractor via email. The notification includes detailed information about the malfunctioning device and any preliminary observations from IT diagnostics.

14.3.2 Preparation and Approval of Work Estimate

Upon receiving the notification, the Contractor assesses the provided information to prepare a work estimate. This estimate outlines the scope of work, parts required, labor, and any additional costs associated with the repair or replacement of the device based on the information received.

The Contractor submits the work estimate to the FDOT Project Manager or their designated representative for review and approval. It is necessary that the Contractor obtains approval from the Project Manager or designee before commencing any work.

14.3.3 Troubleshooting and Communication of Findings

After receiving approval, the Contractor initiates troubleshooting procedures. The Contractor investigates the issue thoroughly and communicates their findings to the FDOT IT Department.

If the troubleshooting process reveals that the device cannot be repaired and must be replaced, the Contractor informs the FDOT IT Department. At this stage, the IT Department is responsible for providing a new replacement device to the Contractor.

14.3.4 Device Replacement and Configuration

The replacement device provided by the IT Department must be pre-configured as the Intelligent Transportation Systems (ITS) Contractor does not have access to, or knowledge of the specific configuration details required for non-ITS devices in the HUBs.

Once the IT Department configures the new device, the Contractor proceeds with the installation and ensures it is correctly integrated into the system.

14.3.5 Completion and Verification of Work

Upon completing the repair or replacement, the Contractor verifies that the device is back online and fully operational. The Contractor coordinates with the IT Department to confirm that the device is functioning as expected.

14.3.6 Submission of Final Work Estimate

After the work is completed, the Contractor prepares and submits a final work estimate. This document includes a detailed breakdown of the actual costs incurred during the repair or replacement process.

15. Maintenance of Traffic (MOT)

15.1 General Overview

The Intelligent Transportation Systems (ITS) Maintenance Contractor is responsible for maintaining the current ITS System along both the Arterial and Interstate Highway System. There will be occasions when the Contractor will need to close sidewalks, shoulders or even traffic lanes to accomplish their Preventative Maintenance activities and/or Repairs. When this is the case, the Maintenance contractor shall make sure to follow all FDOT guidelines and Standard Plans. The maintenance contractor shall also ensure to be using the LCIS system as intended by FDOT.

15.2 LCIS

When the Maintenance Contractor needs to close a lane, they must ensure to use the LCIS system https://lcisv2.com/home. In this system the Contractor must ensure to create a “New Request”. The Contractor must make sure to reference all required information including but limited to:

“Work Type”, “Permit Number”, in this case the maintenance contract, “City”, “Closure Location”, “Work Description”, “Total number of Lanes in Direction of Closure”, “Date”, “Time”, “Agency”, “County”, “Road”, etc.

For non-emergency Maintenance of Traffic (MOT) requests, the Contractor shall not deploy MOT until the MOT request is approved.

15.3 MOT Maintenance Levels

The Maintenance Contractor shall also ensure to reference the correct Standard Index and field contact personnel. The Maintenance Contractor shall assign Maintenance of Traffic (MOT) level as defined in the RFP Exhibit A – Scope of Services.

16. Safety Rules & Regulations

The maintenance staff shall utilize proper safety measures to always ensure the proper protection for persons and property.

All equipment used shall be maintained in a safe and efficient manner in accordance with all local, state, and federal laws, safety organizations, regulations and guidelines pertaining to providing the required services.

Follow all safety requirements outlined in the National Electric Safety Code (NESC), the Occupational Safety and Health Administration (OSHA), and any standards or practices for safe installation or maintenance of equipment.

At the conclusion of a workday, the maintenance personnel must leave the work area so that no safety hazard is present.

Ensure all devices installed are properly registered with Sunshine One-Call.

Maintain the safety required and provide safety equipment and procedures for the protection of employees and the public throughout the area(s) that the maintenance services being performed / provided by the maintenance staff.

Attachment 1

DRAFT Preventive Maintenance Checklist

FDOT District IV Preventive Maintenance Checklist
Dynamic Message Signs (DMS)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

DMS Sign Enclosure/Housing			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Check accessibility to the sign.		
3	Check all pixels for any errors.		
4	Ensure all display modules are secured.		
5	Inspect electronic boards for fault indicators.		
6	Check all fiber optic, serial and coaxial connectors for damage and poor strain relief.		
7	Remove any dust inside housing if applicable.		
8	Vacuum out dust and particles from all devices inside and outside the cabinet including screens, filter holders, louvers and screens covering filter holders.		
9	Check and replace light bulbs if necessary.		
10	Check and lubricate access door.		
11	Insepct and clean DMS surface as needed and in accordance with manufacturer's recommendation. Use bucket truck as needed to clean surface.		
12	Check sign structure for any physical damage, loose-fitting nuts and bolts, etc.		
13	Check condition of gaskets for any damage.		
14	Check drain holes for proper drainage.		
15	Check the operation of light sensors and lighting level controller.		
16	Check heater and heating thermostat operation.		
17	Check the polycarbonate face, if necessary.		
18	Replace air filters, clean exhaust fans and screens.		
19	Check if the power service entrance bushing is secure.		
20	Check that the interior is free of damage, corrosion, condensation, and water leakage.		
21	Test and reset ground fault receptacle.		
22	Measure voltage of power supply to determine if they are within tolerance while under load and inspect fault indicators.		
23	Check that sign enclosure's power and control cables are grouped, bundled and labeled clearly.		
24	Ensure that door switch operates properly.		
25	Check condition of enclosure's painted border.		
Conduit Infrastructure and Pull Boxes			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect all conduit for proper mounting.		
2	Inspect all conduit for environmental damage.		
3	Check for broken and damaged pull boxes.		
4	Check all conduits are sealed.		
DMS Cabinets			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Clean all debris, pests, and animal waste. Apply pest control.		
3	Remove weeds and trim grass within 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
4	Ensure all cabinets are neat and clean in appearance.		
5	Remove graffiti as needed.		
6	Plug all conduits with duct seal or conduit putty.		

FDOT TSM&O DISTRICT FOUR

FDOT District IV Preventive Maintenance Checklist
Dynamic Message Signs (DMS)

SUNGUIDE

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

7	Wipe down all accessible equipment areas, racks, and shelves.		
8	Vacuum out dust and particles from all devices inside and outside the cabinet including screens, filter holders, louvers and screens covering filter holders.		
9	Remove any unused old equipment and hardware.		
10	Replace cabinet filters if required.		
11	Check for watertight cable and conduit connections.		
12	Inspect locking mechanisms and lubricate locks and doors.		
13	Check door seal.		
14	Ensure cabinet identification sticker is visible.		
15	Inspect conduit and base seals.		
16	Check indicator lights on devices for abnormalities. Replace any burned-out or broken light bulbs.		
17	Check the status of all fans. Ensure fans are operational (if equipped).		
18	Check the integrity of grounding connections and lightning protection.		
19	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
20	Check for any loose nuts and bolts, and tighten them.		
21	Check that power and control cables are grouped, bundled, and labeled clearly.		
22	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
23	Ensure that minimum bend radius of fiber optic cables is maintained as per FDOT Standard Specifications.		
24	Ensure that all surge suppression devices are connected properly and free of damage.		
25	Test and reset ground fault receptacles in the cabinet.		
26	Remove trash, if required.		
27	Scan all Inventory Assets at the cabinet.		
28	Before leaving the site, ensure all devices are up and running. Verify with TMC Operations. Make sure cabinet is locked before leaving site.		
Uninterruptible power Supply (UPS) (If applicable)			
29	Ensure that UPS is not by-passed.		
30	Check for leaks or damage to batteries.		
31	Check if UPS is online		
32	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
33	Verify UPS battery level. Replace battery if necessary.		
34	Check batteries installation date and replace as needed.		
35	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		

FDOT District IV Preventive Maintenance Checklist
Dynamic Message Signs (DMS)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

Power Distribution unit (PDU) (If applicable)			
36	Ensure that PDU is not by-passed.		
37	Check if PDU is online via SNMP module (if applicable).		
38	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		
Fiber Optic and Communications Equipment			
No.	**Activity Description**	**Code**	**Comments**
1	Check all communication equipment for proper operation.		
2	Inspect switch. Verify fiber ports are linking.		
3	Check all fiber and copper cable connections.		
4	Inspect equipment for environmental damage.		
5	Remove unused equipment.		
6	Clean and dust equipment.		

Technician Name : Technician Signature :

FDOT District IV Preventive Maintenance Checklist
Closed Circuit Television (CCTV) Cameras

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: County: _____

~~Codes: NA: Not Applicable; G: Good~~; NW: Not Working; P: Problem; R: Repaired

CCTV Camera			
No.	**Activity Description**	**Code**	**Comments**
1	Visually Check for any damage in cabinet and structure/ including camera, detector and solar panels. (Report if any).		
2	Test video at cabinet.		
3	Remove vegetation from the structure and apply herbicide as needed.		
4	Check and tighten all bolts and screws in camera assembly.		
5	Inspect housing mounting for corrosion.		
6	Lower camera and clean thoroughly. Apply Rain-X or anti-fog spray if necessary.		
7	Lubricate lowering device locking mechanism.		
8	Wipe and clean any bird droppings from upper side of camera dome.		
9	Check operation of thermostat inside camera housing.		
10	Check for corrosion of terminal inside housing.		
11	Inspect mounting bracket.		
12	Inspect concrete pole and concrete base for signs of cracks, rust, and missing or broken anchor bolts.		
13	Work with TMC Operations to inspect pan, tilt and zoom mechanism.		
Conduit Infrastructure and Pull Boxes			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect all conduit for proper mounting.		
2	Inspect all conduit for environmental damage.		
3	Check for broken and damaged pull boxes.		
4	Check all conduits are sealed.		
CCTV Cabinets			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Clean all debris, pests, and animal waste. Apply pest control.		
3	Remove weeds and trim grass within 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
4	Ensure all cabinets are neat and clean in appearance.		
5	Remove graffiti if needed.		
6	Plug all conduits with duct seal or conduit putty.		
7	Wipe down all accessible equipment areas, racks, and shelves.		
8	Vacuum out dust and particles from all devices inside and outside the cabinet including screens, filter holders, louvers and screens covering filter holders.		
9	Remove any unused old equipment and hardware.		
10	Replace cabinet filters if required.		
11	Check for watertight cable and conduit connections.		
12	Inspect locking mechanisms and lubricate locks and doors.		
13	Check door seal.		
14	Ensure cabinet identification sticker is visible.		

FDOT District IV Preventive Maintenance Checklist
Closed Circuit Television (CCTV) Cameras

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

15	Inspect conduit and base seals.		
16	Check indicator lights on devices for abnormalities. Replace any burned-out or broken light bulbs.		
17	Check the status of all fans. Ensure fans are operational (if equipped).		
18	Replace any burned-out or broken light bulbs.		
19	Check the integrity of grounding connections and lightning protection.		
20	Check all connectors and wire terminal for tightness.		
21	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
22	Check for any loose nuts and bolts, and tighten them.		
23	Check that power and control cables are grouped, bundled, and labeled clearly.		
24	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
25	Ensure that minimum bend radius of fiber optic cables is maintained as per FDOT Standard Specifications.		
26	Ensure that all surge suppression devices are connected properly and free of damage.		
27	Test and reset ground fault receptacles in the cabinet.		
28	Remove trash, if required.		
29	Scan all Inventory Assets at the cabinet.		
30	Before leaving the site, ensure all devices are up and running. Verify with TMC Operations. Make sure cabinet is locked before leaving site.		
Uninterruptible power Supply (UPS) (If applicable)			
31	Ensure that UPS is not by-passed.		
32	Check for leaks or damage to batteries.		
33	Check if UPS is online via SNMP module.		
34	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
35	Verify UPS battery level. Replace battery if necessary.		
36	Check batteries installation date and replace as needed.		
37	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
Power Distribution unit (PDU) (If applicable)			
38	Ensure that PDU is not by-passed.		
39	Check if PDU is online via SNMP module (if applicable).		
40	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		
Fiber Optic and Communications Equipment			
No	**Activity Description**	**Code**	**Comments**

FDOT District IV Preventive Maintenance Checklist
Closed Circuit Television (CCTV) Cameras

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

1	Check all communication and network equipment for proper operation.		
2	Inspect switch. Verify fiber ports are linking.		
3	Inspect equipment for environmental damage.		
4	Remove unused equipment.		
5	Clean and dust equipment.		

Technician Name :

Technician Signature :

FDOT District IV Preventive Maintenance Checklist
Microwave Vehicle Detection System (MVDS)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: County: _____

~~Codes: NA: Not Applicable; G: Good~~; NW: Not Working; P: Problem; R: Repaired

MVDS			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage, including cameras, detectors, mounting brackets, and solar panels.		
2	Ensure proper aiming of unit and verify device operational status with TMC Operations.		
3	Inspect communication cable and connector.		
4	Clean all debris, pests, and animal waste. Apply pest control if needed.		
5	Verify the reporting interval data is set to 20 seconds and direction and protection settings are correct.		
6	Follow D4 MVDS calibration procedures to perform device calibration (once a year and also as requested).		
Conduit Infrastructure and Pull Boxes			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect all conduit for proper mounting.		
2	Inspect all conduit for environmental damage.		
3	Check for broken and damaged pull boxes.		
4	Check all conduits are sealed.		
MVDS Cabinets			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Remove weeds and trim grass within 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
3	Clean all debris, pests, and animal waste. Apply pest control if needed.		
4	Ensure all cabinets are neat and clean in appearance.		
5	Remove graffiti as needed.		
6	Plug all conduits with duct seal or conduit putty.		
7	Wipe down all accessible equipment areas, racks, and shelves.		
8	Vacuum out dust and particles from the screens, filter holders, louvers and screens covering filter holders.		
9	Remove any unused old equipment and hardware.		
10	Check cabinet filter. Replace if necessary. Ensure fans are operational (if equipped).		
11	Check for watertight cable and conduit connections.		
12	Inspect locking mechanisms. Lubricate locks and doors.		
13	Check door seal.		
14	Ensure cabinet identification sticker is visible.		
15	Inspect conduit and base seals.		
16	Check indicator lights on devices for abnormalities.		
17	Check the status of all fans.		
18	Check the integrity of grounding connections and lightning protection.		
19	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
20	Check for any loose nuts and bolts, and tighten them.		
21	Check all connectors and wire terminals for tightness.		

FDOT District IV Preventive Maintenance Checklist
Microwave Vehicle Detection System (MVDS)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: County: _____

~~Codes: NA: Not Applicable; G: Good~~; NW: Not Working; P: Problem; R: Repaired

22	Check that power and control cables are grouped, bundled, and labeled clearly.		
23	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
24	Ensure that minimum bend radius of fiber optic cables is maintained as per FDOT Standard Specifications.		
25	Ensure that all surge suppression devices are connected properly and free of damage.		
26	Test and reset ground fault receptacles in the cabinet.		
27	Verify functionality of door sensors.		
28	Remove trash, if required.		
29	Scan all Inventory Assets at the cabinet.		
Uninterruptible power Supply (UPS) (If applicable)			
30	Ensure that UPS is not by-passed.		
31	Check for leaks or damage to batteries.		
32	Check if UPS is online via SNMP module.		
33	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
34	Verify UPS battery level. Replace battery if necessary.		
35	Check batteries installation date and replace as needed.		
36	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
Power Distribution unit (PDU) (If applicable)			
37	Ensure that PDU is not by-passed.		
38	Check if PDU is online via SNMP module (if applicable).		
39	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		

Fiber Optic and Communications Equipment			
No	**Activity Description**	**Code**	**Comments**
1	Check all communication equipment for proper operation.		
2	Inspect switch. Verify fiber ports are linking.		
3	Check all fiber and copper cable connections.		
4	Inspect equipment for environmental damage.		
5	Remove unused equipment.		
6	Clean and dust equipment.		

Technician Name : Technician Signature :

FDOT District IV Preventive Maintenance Checklist
Bluetooth Travel Time System (BTTS)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: County: _____

~~Codes: NA: Not Applicable; G: Good~~; NW: Not Working; P: Problem; R: Repaired

Bluetooth Device			
No.	**Activity Description**	**Code**	**Comments**
1	Ensure the device casing is intact and free of visible damage.		
2	Verify there is no damage, corrosion or rust on the mounting hardware.		
3	Check for any signs of water ingress or other environmental damage.		
4	Inspect cables and connectors for wear, fraying, or damage.		
5	Ensure the device is transmitting data.		
6	Verify the network connection (e.g., cellular, Wi-Fi, or Ethernet).		
7	Check signal strength and data transmission rates.		
8	Verify that all sensors are operational.		
9	Use diagnostic tools to check sensor readings and ensure they are within expected ranges.		
10	Remove any dust, dirt, or debris from the device and its surroundings.		
11	Ensure the device is securely mounted and all connections are tight.		
Conduit Infrastructure and Pull Boxes			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect all conduit for proper mounting.		
2	Inspect all conduit for environmental damage.		
3	Check for broken and damaged pull boxes.		
4	Check all conduits are sealed.		
Bluetooth Cabinets			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Clean all debris, pests, and animal waste. Apply pest control.		
3	Remove weeds and trim grass 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
4	Ensure all cabinets are neat and clean in appearance.		
5	Remove graffiti as needed.		
6	Plug all conduits with duct seal or conduit putty.		
7	Wipe down all accessible equipment areas, racks, and shelves.		
8	Vacuum out dust and particles from all devices inside and outside the cabinet including screens, filter holders, louvers and screens covering filter holders.		
9	Remove any unused old equipment and hardware.		
10	Replace cabinet filters if required.		
11	Check for watertight cable and conduit connections.		
12	Inspect locking mechanisms and lubricate locks and doors.		
13	Check door seal.		
14	Ensure cabinet identification sticker is visible.		
15	Inspect conduit and base seals.		

FDOT District IV Preventive Maintenance Checklist
Bluetooth Travel Time System (BTTS)

Device
Device Location:
Roadway:
County:

Technician's Name:
Date (mm/dd/yyyy):

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

16	Check indicator lights on devices for abnormalities. Replace any burned-out or broken light bulbs.		
17	Check the status of all fans. Ensure fans are operational (if equipped).		
18	Replace any burned-out or broken light bulbs.		
19	Check the integrity of grounding connections and lightning protection.		
20	Check all connectors and wire terminal for tightness.		
21	Confirm the power supply is connected securely.		
22	Measure the voltage at the power input using a multimeter.		
23	Verify the voltage is within the device's operational range (typically 12V DC or specified).		
24	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
25	Check for any loose nuts and bolts, and tighten them.		
26	Check that power and control cables are grouped, bundled, and labeled clearly.		
27	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
28	Ensure that minimum bend radius of fiber optic cables is maintained as per FDOT Standard Specifications.		
29	Ensure that all surge suppression devices are connected properly and free of damage.		
30	Test and reset ground fault receptacles in the cabinet.		
31	Remove trash, if required.		
32	Scan all Inventory Assets at the cabinet.		
33	Before leaving the site, ensure all devices are up and running. Verify with TMC Operations. Make sure cabinet is locked before leaving site.		
Uninterruptible power Supply (UPS) (If applicable)			
34	Ensure that UPS is not by-passed.		
35	Check for leaks or damage to batteries.		
36	Check if UPS is online via SNMP module.		
37	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
38	Verify UPS battery level. Replace battery if necessary.		
39	Check batteries installation date and replace as needed.		
40	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		

FDOT District IV Preventive Maintenance Checklist
Bluetooth Travel Time System (BTTS)

Device _____ **Technician's Name:** _____

Device Location: _____ **Date (mm/dd/yyyy):** _____

Roadway: _____

County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

Power Distribution unit (PDU) (If applicable)		
41 Ensure that PDU is not by-passed.		
42 Check if PDU is online via SNMP module (if applicable).		
43 Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		

Technician Name :

Technician Signature :

FDOT TSM&O DISTRICT FOUR

FDOT District IV Preventive Maintenance Checklist
Inductive Loops

SUNGUIDE

Device ID: _____ **Technician's Name:** _____

Device Location: _____ **Date (mm/dd/yyyy):** _____

Roadway: _____

County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

Inductive Loops			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Inspect communication cables and connectors.		
3	Check all communication equipment for proper operation.		
4	Check loop for continuity and ensure operational.		
Conduit Infrastructure and Pull Boxes			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect all conduit for proper mounting.		
2	Inspect all conduit for environmental damage.		
3	Check for broken and damaged pull boxes.		
4	Check all conduits are sealed.		
Inductive Loop Cabinets			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Clean all debris, pests, and animal waste. Apply pest control.		
3	Remove weeds and trim grass within 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
4	Ensure all cabinets are neat and clean in appearance.		
5	Remove graffiti as needed.		
6	Plug all conduits with duct seal or conduit putty.		
7	Wipe down all accessible equipment areas, racks, and shelves.		
8	Vacuum out dust and particles from all devices inside and outside the cabinet including screens, filter holders, louvers and screens covering filter holders.		
9	Remove any unused old equipment and hardware.		
10	Replace cabinet filters if required.		
11	Check for watertight cable and conduit connections.		
12	Inspect locking mechanisms and lubricate locks and doors.		
13	Check door seal.		
14	Ensure cabinet identification sticker is visible.		
15	Inspect conduit and base seals.		
16	Check indicator lights on devices for abnormalities. Replace any burned-out or broken light bulbs.		
17	Check the status of all fans. Ensure fans are operational (if equipped).		
18	Replace any burned-out or broken light bulbs.		
19	Check the integrity of grounding connections and lightning protection.		
20	Check all connectors and wire terminal for tightness.		
21	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
22	Check for any loose nuts and bolts, and tighten them.		
23	Check that power and control cables are grouped, bundled, and labeled clearly.		

FDOT District IV Preventive Maintenance Checklist
Inductive Loops

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

24	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
25	Ensure that minimum bend radius of fiber optic cables is maintained as per FDOT Standard Specifications.		
26	Ensure that all surge suppression devices are connected properly and free of damage.		
27	Test and reset ground fault receptacles in the cabinet.		
28	Remove trash, if required.		
29	Scan all Inventory Assets at the cabinet.		
30	Before leaving the site, ensure all devices are up and running. Verify with TMC Operations. Make sure cabinet is locked before leaving site.		
Uninterruptible power Supply (UPS) (If applicable)			
31	Ensure that UPS is not by-passed.		
32	Check for leaks or damage to batteries.		
34	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
35	Verify UPS battery level. Replace battery if necessary.		
36	Check batteries installation date and replace as needed.		
37	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
Power Distribution unit (PDU) (If applicable)			
38	Ensure that PDU is not by-passed.		
39	Check if PDU is online via SNMP module (if applicable).		
40	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		

Fiber Optic and Communications Equipment			
No	**Activity Description**	**Code**	**Comments**
1	Check all communication and network equipment for proper operation.		
2	Inspect switch. Verify fiber ports are linking.		
3	Inspect equipment for environmental damage.		
4	Remove unused equipment.		
5	Clean and dust equipment.		

Technician Name :

Technician Signature :

FDOT District IV Preventive Maintenance Checklist
Magnetic Traffic Detection System (Sensys Detector)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: County: _____

~~Codes: NA: Not Applicable; G: Good~~; NW: Not Working; P: Problem; R: Repaired

Sensys System (Truck Parking Availability System TPAS)			
No.	**Activity Description**	**Code**	**Comments**
1	Visually inspect cabinet and structure for damage, including cameras, detectors, and solar panels.		
2	Remove vegetation from the structure and apply herbicide as needed.		
3	Survey site for damages, pull boxes, fiber markers. Clear vegetation around pull boxes are slabs. Apply herbicide as necessary.		
4	Inspect communication cable and connector.		
5	Ping and Connect to the Sensys Server.		
6	Confirm the Sensys repeater is communicating with the main cabinet.		
7	Check sensors battery level from the sever.		
8	Ensure proper aiming of unit and verify device operational status with TMC Operations.		
Conduit Infrastructure and Pull Boxes			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect all conduit for proper mounting.		
2	Inspect all conduit for environmental damage.		
3	Check for broken and damaged pull boxes.		
4	Check all conduits are sealed.		
Sensys Cabinet			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Clean all debris, pests, and animal waste. Apply pest control.		
3	Remove weeds and trim grass 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
4	Ensure all cabinets are neat and clean in appearance.		
5	Remove graffiti as needed.		
6	Plug all conduits with duct seal or conduit putty.		
7	Wipe down all accessible equipment areas, racks, and shelves.		
8	Vacuum and wipe dust from all devices inside and outside the cabinet including screens, filter holders, louvers and screens covering filter holders.		
9	Remove any unused old equipment and hardware.		
10	Check cabinet filter; replace if necessary. Ensure fans are operational (if equipped).		
11	Check for watertight cable and conduit connections.		
12	Inspect locking mechanisms. Check and lubricate locks and doors.		
13	Check door seal.		
14	Ensure cabinet identification sticker is visible.		
15	Inspect conduit and base seals.		
16	Check indicator lights on devices for abnormalities.		
17	Replace any burned-out or broken light bulbs.		
18	Check the status of all fans.		
19	Check all connectors and wire terminals for tightness.		
20	Check the integrity of grounding connections and lightning protection.		

FDOT TSM&O DISTRICT FOUR

FDOT District IV Preventive Maintenance Checklist
Magnetic Traffic Detection System (Sensys Detector)

SUNGUIDE

Device ID: _____ **Technician's Name:** _____

Device Location: _____ **Date (mm/dd/yyyy):** _____

Roadway: _____

County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

21	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
22	Inspect switch. Verify fiber ports are linking.		
23	Check for any loose nuts and bolts, and tighten them.		
24	Check that power and control cables are grouped, bundled, and labeled clearly.		
25	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
26	Ensure that all surge suppression devices are connected properly and free of damage.		
27	Verify functionality of door sensors.		
28	Test and reset ground fault receptacles in the cabinet.		
29	Remove trash, if required.		
30	Ensure all devices are operational before leaving. Verify with TMC Operations.		
31	Scan all Inventory Assets at the cabinet.		
Uninterruptible Power Supply (UPS) (If applicable)			
32	Ensure that UPS is not by-passed.		
33	Check for leaks or damage to batteries.		
34	Check if UPS is online via SNMP module.		
35	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
36	Verify UPS battery level. Replace battery if necessary.		
37	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
Power distribution unit (PDU) (If applicable)			
38	Ensure that PDU is not by-passed.		
39	Check if PDU is online via SNMP module (if applicable).		
40	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		

Technician Name : Technician Signature :

FDOT TSM&O DISTRICT FOUR

FDOT District IV Preventive Maintenance Checklist
Wrong Way Vehicle Detection Systems (WWVDS)

SUNGUIDE

Device ID: _____ **Technician's Name:** _____

Device Location: _____ **Date (mm/dd/yyyy):** _____

_____

Roadway: County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

Wrong Way Vehicle Detection Systems			
No.	**Activity Description**	**Code**	**Comments**
1	Visually inspect all detection equipment and signs for physical damage.		
2	Check and/or replace highlighted wrong way sign. If the highlighted wrong way sign needs to be replaced, follow regular ITS maintenance procedures.		
3	Inspect all detection zones per manufacturer recommendation.		
4	Inspect communication cable and connector.		
5	Check and adjust all wrong way detection equipment and signs to face the correct direction per manufacturer recommendation.		
6	Check and ensure proper operations of highlighted "WRONG WAY" advisory sign.		
7	Visually verify integrity of detection system and confirm with TMC Operations that the wrong way vehicle detectors are collecting data for all travel lanes in one direction, including shoulders.		
8	Cut or trim any foliage obstructing the visibility of signs and clean graffiti.		
9	Follow test and/or validation procedures per manufacturer recommendation. Proper maintenance of traffic (MOT) procedures shall be followed when closing ramps and other roadways.		
Conduit Infrastructure and Pull Boxes			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect all conduit for proper mounting.		
2	Inspect all conduit for environmental damage.		
3	Check for broken and damaged pull boxes.		
4	Check all conduits are sealed.		
Wrong Way Vehicle Detection Systems Cabinets			
No.	**Activity Description**	**Code**	**Comments**
1	Visually inspect all detection equipment and signs for physical damage.		
2	Clean all debris, pests, and animal waste. Apply pest control.		
3	Remove weeds and trim grass within 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
4	Ensure all cabinets are neat and clean in appearance.		
5	Remove graffiti as needed.		
6	Plug all conduits with duct seal or conduit putty.		
7	Wipe down all accessible equipment areas, racks, and shelves.		
8	Vacuum out dust and particles from the screens, filter holders, louvers and screens covering filter holders.		
9	Remove any unused old equipment and hardware.		
10	Replace cabinet filters.		
11	Check for watertight cable and conduit connections.		
12	Inspect locking mechanisms and lubricate locks and doors		
13	Check door seal.		
14	Ensure cabinet identification sticker is visible.		
15	Inspect conduit and base seals.		
16	Replace any burned-out or broken light bulbs.		

FDOT District IV Preventive Maintenance Checklist
Wrong Way Vehicle Detection Systems (WWVDS)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

17	Check the status of all fans.		
18	Check the integrity of grounding connections and lightning protection.		
19	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
20	Check for any loose nuts and bolts, and tighten them.		
21	Check that power and control cables are grouped, bundled, and labeled clearly.		
22	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
23	Ensure that all surge suppression devices are connected properly and free of damage.		
24	Test and reset ground fault receptacles in the cabinet.		
25	Remove trash, if required.		
26	Ensure the cabinet has a generator access panel.		
Uninterruptible Power Supply (UPS) (If applicable)			
27	Ensure that UPS is not by-passed.		
28	Check for leaks or damage to batteries.		
29	Check if UPS is online via SNMP module.		
30	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
31	Check batteries installation date and replace as needed per manufacturer recommendation.		
32	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
Power Distribution Unit (PDU) (If applicable)			
33	Ensure that PDU is not by-passed.		
34	Check if PDU is online via SNMP module (if applicable).		
35	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		
36	Check all communication equipment for proper operation.		
37	Check fiber and copper cable connections.		
38	Inspect equipment for environmental damage.		
39	Remove unused equipment.		
40	Clean and dust equipment.		
41	Ensure that minimum bend radius of fiber optic cable is maintained as per FDOT Standard Specifications.		

Technician Name : Technician Signature :

FDOT District IV Preventive Maintenance Checklist
Communication HUB Building

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

HUB Building			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage on cabinet/building components.		
2	Test burglar alarm system (if present) to ensure functionality.		
3	Inspect generator connections for tightness and signs of wear.		
4	Clean and dust exterior and interior of building, including weed removal.		
5	Inspect communication and network equipment EXCEPT for layer 3 hub switches and its accessories.		
6	Inspect A/C system, replace filters if necessary.		
7	Check thermostat operation. Swap active A/C unit if necessary.		
8	Inspect light bulbs and replace if burned out.		
9	Inspect fire extinguishers. Recharge or replace if necessary.		
10	Inspect hub security equipment (i.e. security cameras, room alert devices, etc.)		
11	Apply pest control if necessary.		
12	Inspect locking mechanisms and lubricate locks and doors		
13	Remove graffiti as needed.		
14	Remove trash.		
Conduits and Pull Boxes			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect all conduit for proper mounting and security.		
2	Inspect all conduit for environmental damage (e.g., corrosion, water damage).		
3	Check for broken and damaged pull boxes.		
4	Inspect conduit and base seals for integrity.		
HUB Electronic Equipment			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect and check electronic / Comm. Equipment for proper operation.		
2	Inspect and check cables and connectors for tightness and damage.		
3	Inspect and test UPS System. Verify UPS functionality by simulating a power failure at the disconnect.		
4	Vacuum and dust equipment racks to remove debris.		
5	Check the integrity of grounding connections and lightning protection.		
6	Ensure that all surge suppression devices are connected properly and free of damage.		
7	Inspect lighting system for proper operations and brightness.		
Uninterruptible power Supply (UPS) (If applicable)			
8	Ensure that UPS is not by-passed.		
9	Check for leaks or damage to batteries.		
10	Check if UPS is online via SNMP module.		
11	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
12	Verify UPS battery level. Replace battery if necessary.		
13	Check batteries installation date and replace as needed.		

FDOT District IV Preventive Maintenance Checklist
Communication HUB Building

Device ID: _____ **Technician's Name:** _____

Device Location: _____ **Date (mm/dd/yyyy):** _____

Roadway: _____

County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

14	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
Power Distribution unit (PDU) (If applicable)			
15	Ensure that PDU is not by-passed.		
16	Check if PDU is online via SNMP module (if applicable).		
17	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		
Generator			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Ensure generator pad and surrounding area is clear of garbage and foliage. Use weed killer as needed.		
3	Check external conduits for rust,spray paint if needed.		
4	Check generator controller for alarms if applicable.		
5	Clean and vacuum the generator to remove dust and debris.		
6	Check fuel level, refuel if tank is under 90% capacity.		
7	Check battery voltage is within acceptable ranges.		
8	Check radiator (water level, pressure, coolant).		
9	Check belts and adjust as needed.		
10	Check hoses and clamps.		
11	Check operations of block heater.		
12	Check drip drain on exhaust		
13	Inspect exhaust sytem.		
14	Check electrical connections.		
15	Check for leaks.		
16	Check engine coolant temperature.		
17	Check safety shutdowns.		
18	Check automatic transfer switch operation.		
19	Verify generator is online and in standby mode on the monitoring software.		
20	Start generator and run for 10 minutes; inspect for leaks during operation.		
21	Ensure generator is shown as running on the monitoring software during the 10-minute run.		
22	After 10 minutes of operation, stop generator and verify it returns to resting state on the monitoring software.		
23	Confirm all generator doors are securely locked after maintenance is completed.		

Technician Name :

Technician Signature :

FDOT District IV Preventive Maintenance Checklist
Communication HUB Cabinet

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

HUB Cabinet			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Test burglar alarm if applicable.		
3	Clean and dust exterior and Interior of cabinet.		
4	Inspect all communication and network equipment EXCEPT for layer 3 hub switches and its assessories.		
5	Inspect A/C system, replace filters if require.		
6	Check thermostat operation; swap active A/C unit if necessary.		
7	Inspect light bulbs and replace if require.		
8	Apply Pest control if required.		
9	Remove weeds and trim grass within 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
10	Check and lubricate doors and locks.		
11	Ensure all cabinets are neat and clean in appearance.		
12	Remove graffiti as needed.		
13	Plug all conduits with duct seal or conduit putty.		
14	Wipe down all accessible equipment areas, racks, and shelves.		
15	Vacuum out dust and particles from all devices inside and outside the cabinet including screens, filter holders, louvers and screens covering filter holders.		
16	Remove any unused old equipment and hardware.		
17	Replace cabinet filters if required.		
18	Check for watertight cable and conduit connections.		
19	Inspect locking mechanisms and lubricate locks and doors		
20	Check door seal.		
21	Ensure cabinet identification sticker is visible.		
22	Inspect conduit and base seals.		
23	Check the status of all fans. Ensure fans are operational (if equipped).		
24	Check indicator lights on devices for abnormalities. Replace any burned-out or broken light bulbs.		
25	Check the integrity of grounding connections and lightning protection.		
26	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
27	Check for any loose nuts and bolts, and tighten them.		
28	Check that power and control cables are grouped, bundled, and labeled clearly.		
29	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
30	Ensure that minimum bend radius of fiber optic cables is maintained as per FDOT Standard Specifications.		
Uninterruptible power Supply (UPS) (If applicable)			
31	Ensure that UPS is not by-passed.		

FDOT District IV Preventive Maintenance Checklist
Communication HUB Cabinet

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

32	Check for leaks or damage to batteries.		
33	Check if UPS is online via SNMP module.		
34	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
35	Verify UPS battery level. Replace battery if necessary.		
36	Check batteries installation date and replace as needed.		
37	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
Power Distribution unit (PDU) (If applicable)			
38	Ensure that PDU is not by-passed.		
39	Check if PDU is online via SNMP module (if applicable).		
40	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		
41	Remove trash.		

Conduits and Pull Boxes

No.	Activity Description	Code	Comments
1	Inspect all Conduit for Proper Mounting.		
2	Inspect all Conduit for Environmental Damage.		
3	Check for Broken and Damaged Pull Boxes.		

Generator (if applicable)

No.	Activity Description	Code	Comments
1	Visually check for physical damage.		
2	Ensure generator pad and surrounding area is clear of garbage and foliage. Use weed killer as needed.		
3	Check external conduits for rust,spray paint if needed.		
4	Check generator controller for alarms if applicable.		
5	Clean and vacuum the generator to remove dust and debris.		
6	Check fuel level, refuel if generator tank is under 90% capacity.		
7	Check battery voltage is within acceptable ranges.		
8	Check radiator (water level, pressure, coolant).		
9	Check belts and adjust as needed.		
10	Check hoses and clamps.		
11	Check operations of block heater.		
12	Check drip drain on exhaust		
13	Inspect exhaust sytem.		
14	Check electrical connections.		
15	Check for leaks.		
16	Check engine coolant temperature.		
17	Check safety shutdowns.		
18	Check automatic transfer switch operation.		

FDOT District IV Preventive Maintenance Checklist
Communication HUB Cabinet

Device ID: _____ **Technician's**
Device Location: **Name:**
_____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

19	Verify generator is online and in standby mode on the monitoring software.		
20	Start generator and run for 10 minutes; inspect for leaks during operation.		
21	Ensure generator is shown as running on the monitoring software during the 10-minute run.		
22	After 10 minutes of operation, stop generator and verify it returns to resting state on the monitoring software.		
23	Confirm all generator doors are securely locked after maintenance is completed.		

Technician Name : Technician Signature :

FDOT TSM&O Transportation Systems Management & Operations DISTRICT FOUR

FDOT District IV Preventive Maintenance Checklist
Ramp Signaling System

SUNGUIDE

Device ID: Device _____ **Technician's Name:** _____
Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County:

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R:

Ramp Signaling System			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check signs for physical damage.		
2	Check and/or replace LED lamps.		
3	Inspect all loop detectors.		
4	Inspect communication cable and connector.		
5	Check signal light head for correct operation.		
6	Check and adjust signal head to face the correct direction.		
7	Check the stop line and ensure it is clearly visible.		
8	Check and ensure proper operations of flashing beacons at "Ramp Metered When Flashing" advisory sign.		
9	Visually verify integrity of loop system and confirm with Operations that the queue, demand and passage loop detectors are collecting data.		
10	Check and ensure that all ramp signals and ancillary advisory signs are free from obstructions and visible to motorists.		
11	Cut or trim any foliage obstructing the visibility of signs and clean graffiti.		
12	Request TMC Operations to send command to turn on and off and verify operation of the ramp signal.		
Conduit Infrastructure and Pull Boxes			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect all conduit for proper mounting.		
2	Inspect all conduit for environmental damage.		
3	Check for broken and damaged pull boxes.		
4	Check all conduits are sealed.		
Ramp Signaling Cabinets			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Clean all debris, pests, and animal waste. Apply pest control.		
3	Remove weeds and trim grass within 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
4	Ensure all cabinets are neat and clean in appearance.		
5	Remove graffiti as needed.		
6	Plug all conduits with duct seal or conduit putty.		
7	Wipe down all accessible equipment areas, racks, and shelves.		
8	Vacuum out dust and particles from the screens, filter holders, louvers and screens covering filter holders.		
9	Remove any unused old equipment and hardware.		
10	Replace cabinet filters if necessary.		
11	Check for watertight cable and conduit connections.		
12	Inspect locking mechanisms and lubricate locks and doors.		
13	Check door seals for integrity.		
14	Ensure cabinet identification sticker is visible.		

FDOT District IV Preventive Maintenance Checklist
Ramp Signaling System

Device ID: Device _____ **Technician's Name:** _____
Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County:

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R:

15	Inspect conduit and base seals.		
16	Replace any burned-out or broken light bulbs.		
17	Check the status of all fans.		
18	Check the integrity of grounding connections and lightning protection.		
19	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
20	Check for any loose nuts and bolts, and tighten them.		
21	Check that power and control cables are grouped, bundled, and labeled clearly.		
22	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
23	Ensure that minimum bend radius of fiber optic cables is maintained as per FDOT Standard Specifications.		
24	Ensure that all surge suppression devices are connected properly and free of damage.		
25	Test and reset ground fault receptacles in the cabinet.		
26	Remove trash, if required.		
Uninterruptible power Supply (UPS) (If applicable)			
27	Ensure that UPS is not by-passed.		
28	Check for leaks or damage to batteries.		
29	Check if UPS is online via SNMP module.		
30	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
31	Check batteries installation date and replace as needed.		
32	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
Power distribution unit (PDU) (If applicable)			
33	Ensure that PDU is not by-passed.		
34	Check if PDU is online via SNMP module (if applicable).		
35	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		

Fiber Optic and Communications Equipment			
No	**Activity Description**	**Code**	**Comments**
1	Check all communication equipment for proper operation.		
2	Check fiber and copper cable connections.		
3	Inspect equipment for environmental damage.		
4	Remove unused equipment.		
5	Clean and dust equipment.		

Technician Name : Technician Signature :

FDOT District IV Preventive Maintenance Checklist
Variable Speed Limit Sign (VSLS)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

VSLS			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for any physical damage in cabinet, structure, cameras, detectors, and solar panels. Report any damage found.		
2	Clean debris and soil from the face of the display and sign.		
3	Check LED or light bulb lamps.		
4	Inspect radar head.		
5	Inspect controller board.		
6	Inspect display boards.		
7	Check and verify sign face for proper angle.		
8	Check bolts on the sign face for tightness, as well as check the mounting (banding, clamps, or U-bolts) that attaches the display to the pole or other mounting structure.		
9	Where applicable, check that the solar panels are free from undue debris or obstructions that may reduce the sunlight available to the panel.		
10	Where applicable, check solar batteries for any leaks and/or loose connections.		
Conduit Infrastructure and Pull Boxes			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect all conduit for proper mounting.		
2	Survey site for damages, pull boxes, fiber markers, etc. Clear vegetation from top of pull boxes or slabs and apply herbicide.		
3	Inspect all conduit for environmental damage.		
4	Check all conduits are sealed.		
VSLS Cabinets			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Clean all debris, pests, and animal waste. Apply pest control.		
3	Remove weeds and trim grass 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
4	Ensure all cabinets are neat and clean in appearance.		
5	Remove graffiti as needed.		
6	Plug all conduits with duct seal or conduit putty.		
7	Wipe down all accessible equipment areas, racks, and shelves.		
8	Vacuum out dust and particles from the screens, filter holders, louvers and screens covering filter holders.		
9	Remove any unused old equipment and hardware.		
10	Check cabinet filter; replace if necessary. Ensure fans are operational if present.		
11	Check for watertight cable and conduit connections.		
12	Inspect locking mechanism and lubricate locks and doors		
13	Check door seal.		
14	Ensure cabinet identification sticker is visible.		

FDOT District IV Preventive Maintenance Checklist
Variable Speed Limit Sign (VSLS)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

15	Inspect conduit and base seals.		
16	Check all indicator lights on devices for any abnormalities.		
17	Replace any burned-out or broken light bulbs.		
18	Check the status of all fans.		
19	Check the integrity of grounding connections and lightning protection.		
20	Check all connectors and wire terminals are snug and tight.		
21	Inspect switch to ensure both fiber ports are properly linked. Report issues if ports are not linking.		
22	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
23	Check for any loose nuts and bolts, and tighten them.		
24	Check that power and control cables are grouped, bundled, and labeled clearly.		
25	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
26	Verify door sensors are functioning correctly.		
27	Before leaving the site, ensure all devices are operational. Verify with TMC Operations if applicable. Lock the cabinet securely.		
28	Scan all inventory assets in the cabinet.		
Uninterruptible power Supply (UPS) (If applicable)			
29	Ensure that UPS is not by-passed.		
30	Check for leaks or damage to batteries.		
31	Check if UPS is online via SNMP module.		
32	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
33	Verify UPS battery level. Replace battery if necessary.		
34	Check batteries installation date and replace as needed.		
35	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
Power Distribution unit (PDU) (If applicable)			
36	Ensure that PDU is not by-passed.		
37	Check if PDU is online via SNMP module (if applicable).		
38	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		

Technician Name : Technician Signature :

FDOT District IV Preventive Maintenance Checklist
Road Weather Information System (RWIS)

Device ID: _____ **Technician's Name:** _____

Device Location: _____ **Date (mm/dd/yyyy):** _____

Roadway: _____

County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

RWIS			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect the Cabinet and Structure for Damage, Examine the cabinet and structure for any signs of damage. Look for any cracks in the road surface, loose parts, or rubber/debris covering the sensor. Report any issues found.		
2	Complete a visible check of the station for any dirt, insects, or plants that require subsequent cleaning and cutting.		
3	Survey the Site for Damage and Obstructions, check for damages around the site, including pull boxes and fiber markers. Remove any vegetation over pull boxes or slabs and apply herbicide.		
4	Inspect Visibility and Weather Sensors for Damage or Obstruction, check all sensors for any damage or obstructions and clean them if necessary.		
5	Check that sensors are working within required accuracy levels.		
6	Clean all lenses, sensors, and masts.		
7	Test communication modules to make sure they are working properly (i.e.Data transmit and receive).		
8	Check software. Ensure all sensors are polling as they should on ViewMondo if applicable.		
9	Check for intermittent problems.		
10	Review data to check that it is displaying correctly.		
11	Check main fuse holders, ensure that all components in the main fuse holders are tightly connected and free of corrosion.		
12	Confirm temperature, water film, and surface state data is reporting accurately.		
13	Perform Annual Calibration, conduct the annual calibration using the calibration kit, following the instructions provided by the calibration tool program from Manufacturer		
RWIS Cabinets			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Clean all debris, pests, and animal waste. Apply pest control.		
3	Remove weeds and trim grass within 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
4	Ensure all cabinets are neat and clean in appearance.		
5	Remove graffiti as needed.		
6	Plug all conduits with duct seal or conduit putty.		

FDOT District IV Preventive Maintenance Checklist
Road Weather Information System (RWIS)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

7	Wipe down all accessible equipment areas, racks, and shelves.		
8	Vacuum out dust and particles from all devices inside and outside the cabinet including screens, filter holders, louvers and screens covering filter holders.		
9	Remove any unused old equipment and hardware.		
10	Replace cabinet filters if required.		
11	Check for watertight cable and conduit connections.		
12	Inspect locking mechanisms and lubricate locks and doors.		
13	Check door seal.		
14	Ensure cabinet identification sticker is visible.		
15	Inspect conduit and base seals.		
16	Check indicator lights on devices for abnormalities. Replace any burned-out or broken light bulbs.		
17	Check the status of all fans. Ensure fans are operational (if equipped).		
18	Check the integrity of grounding connections and lightning protection.		
19	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
20	Check for any loose nuts and bolts, and tighten them.		
21	Check that power and control cables are grouped, bundled, and labeled clearly.		
22	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
23	Ensure that minimum bend radius of fiber optic cables is maintained as per FDOT Standard Specifications.		
24	Ensure that all surge suppression devices are connected properly and free of damage.		
25	Test and reset ground fault receptacles in the cabinet.		
26	Remove trash, if required.		
27	Scan all Inventory Assets at the cabinet.		
28	Before leaving the site, ensure all devices are up and running. Verify with TMC Operations. Make sure cabinet is locked before leaving site.		
Uninterruptible power Supply (UPS) (If applicable)			
29	Ensure that UPS is not by-passed.		
30	Check for leaks or damage to batteries.		
31	Check if UPS is online via SNMP module.		
32	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
33	Verify UPS battery level. Replace battery if necessary.		
34	Check batteries installation date and replace as needed.		

FDOT District IV Preventive Maintenance Checklist
Road Weather Information System (RWIS)

Device ID: _____ **Technician's**
Device Location: _____ **Name:**
Date (mm/dd/yyyy): _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

35	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
Power Distribution unit (PDU) (If applicable)			
36	Ensure that PDU is not by-passed.		
37	Check if PDU is online via SNMP module (if applicable).		
38	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		
Fiber Optic and Communications Equipment			
No.	**Activity Description**	**Code**	**Comments**
1	Check all communication equipment for proper operation.		
2	Inspect switch. Verify fiber ports are linking.		
3	Check all fiber and copper cable connections.		
4	Inspect equipment for environmental damage.		
5	Remove unused equipment.		
6	Clean and dust equipment.		

Technician Name :

Technician Signature :

FDOT District IV Preventive Maintenance Checklist
Wireless Access Points (WAP)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
_____
Roadway: County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

WAP			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check device casing is intact and free of damage.		
2	Check there is no corrosion or rust on mounting hardware.		
3	Check there are no signs of water ingress or environmental damage.		
4	Ensure cables and connectors are free of wear or damage.		
5	Check power supply is securely connected.		
6	Check voltage is within operational range (24V or 48V PoE).		
7	Check device is connected to the network.		
8	Check ethernet cable is securely connected.		
9	Ensure network connectivity is stable.		
10	Check there is strong signal strength in coverage zone. No signficant dead spots or interferrence.		
11	Check device temperature is within recommended range.		
12	Check upload and download speeds meet expected performance.		
13	Clean device and surroundings.		
14	Ensure device is securly mounted.		
15	Check all connections are tight.		

WAP Cabinets (if standalone)			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Clean all debris, pests, and animal waste. Apply pest control.		
3	Remove weeds and trim grass within 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
4	Ensure all cabinets are neat and clean in appearance.		
5	Remove graffiti as needed		
6	Plug all conduits with duct seal or conduit putty.		
7	Wipe down all accessible equipment areas, racks, and shelves.		
8	Vacuum out dust and particles from all devices inside and outside the cabinet including screens, filter holders, louvers and screens covering filter holders.		

FDOT District IV Preventive Maintenance Checklist
Wireless Access Points (WAP)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
_____
Roadway: County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

9	Remove any unused old equipment and hardware.		
10	Replace cabinet filters if required.		
11	Check for watertight cable and conduit connections.		
12	Inspect locking mechanisms and lubricate locks and doors.		
13	Check door seal.		
14	Ensure cabinet identification sticker is visible.		
15	Inspect conduit and base seals.		
16	Check indicator lights on devices for abnormalities. Replace any burned-out or broken light bulbs.		
17	Check the status of all fans. Ensure fans are operational (if equipped).		
18	Check the integrity of grounding connections and lightning protection.		
19	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
20	Check for any loose nuts and bolts, and tighten them.		
21	Check that power and control cables are grouped, bundled, and labeled clearly.		
22	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
23	Ensure that all surge suppression devices are connected properly and free of damage.		
24	Test and reset ground fault receptacles in the cabinet.		
25	Remove trash, if required.		
26	Scan all Inventory Assets at the cabinet.		
27	Before leaving the site, ensure all devices are up and running. Verify with TMC Operations. Make sure cabinet is locked before leaving site.		
Uninterruptible power Supply (UPS) (If applicable)			
28	Ensure that UPS is not by-passed.		
29	Check for leaks or damage to batteries.		
30	Check if UPS is online via SNMP module.		

FDOT District IV Preventive Maintenance Checklist
Wireless Access Points (WAP)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
_____
Roadway: County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

31	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
32	Verify UPS battery level. Replace battery if necessary.		
33	Check batteries installation date and replace as needed.		
34	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
Power Distribution unit (PDU) (If applicable)			
35	Ensure that PDU is not by-passed.		
36	Check if PDU is online via SNMP module (if applicable).		
37	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		

Technician Name : Technician Signature :

FDOT District IV Preventive Maintenance Checklist
Highway Advisory Radio (HAR) System

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

HAR			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage to the antenna, digital recorder player, device structure, mounting hardware, communication devices and cabinet.		
2	Remove vegetation from the structure and apply herbicide as necessary.		
3	Inspect the operational status of HAR by tuning into its frequency verify signal can be received by a radio.		
Conduit Infrastructure and Pull Boxes			
No.	**Activity Description**	**Code**	**Comments**
1	Inspect all conduit for proper mounting.		
2	Inspect all conduit for environmental damage.		
3	Check for broken and damaged pull boxes. Clear vegetation around pull boxes and slabs. Apply herbicide as necessary.		
4	Check all conduits are sealed.		
HAR Cabinets			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Clean all debris, pests, and animal waste. Apply pest control.		
3	Remove weeds and trim grass within 10 feet around cabinet and trim tree branches within 3 feet of the cabinet.		
4	Ensure all cabinets are neat and clean in appearance.		
5	Remove graffiti as needed.		
6	Plug all conduits with duct seal or conduit putty.		
7	Wipe down all accessible equipment areas, racks, and shelves.		
8	Vacuum and wipe dust from all devices inside and outside the cabinet including screens, filter holders, louvers and screens covering filter holders.		
9	Remove any unused old equipment and hardware.		
10	Check cabinet filter; replace if necessary. Ensure fans are operational (if equipped).		
11	Check for watertight cable and conduit connections.		
12	Inspect locking mechanisms and lubricate locks and doors		
13	Check door seal.		
14	Ensure cabinet identification sticker is visible.		
15	Inspect conduit and base seals.		
16	Check indicator lights on devices for abnormalities.		
17	Replace any burned-out or broken light bulbs.		
18	Check the status of all fans.		
19	Check all connectors and wire terminals for tightness.		
20	Check the integrity of grounding connections and lightning protection.		
21	Inspect switch. Verify fiber ports are linking.		
22	Check that power service panel and breaker, power service enclosure, and power service conduits are securely mounted.		
23	Check for any loose nuts and bolts, and tighten them.		

FDOT District IV Preventive Maintenance Checklist
Highway Advisory Radio (HAR) System

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

24	Check that power and control cables are grouped, bundled, and labeled clearly.		
25	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
26	Ensure that all surge suppression devices are connected properly and free of damage.		
27	Test and reset ground fault receptacles in the cabinet.		
28	Check for leaks or damage to batteries.		
29	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
30	Verify functionality of door sensors.		
31	Remove trash, if required.		
32	Scan all Inventory Assets at the cabinet.		
33	Ensure devices are operational before leaving. Verify with TMC Operations.		
Uninterruptible power Supply (UPS) (If applicable)			
34	Ensure that UPS is not by-passed.		
35	Check for leaks or damage to batteries.		
36	Check if UPS is online via SNMP module.		
37	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
38	Verify UPS battery level. Replace battery if necessary.		
39	Check batteries installation date and replace as needed.		
40	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		
Power Distribution unit (PDU) (If applicable)			
41	Ensure that PDU is not by-passed.		
42	Check if PDU is online via SNMP module (if applicable).		
43	Initiate PDU test cycle by turning off AC input power from UPS and AC external power input.		

Fiber Optic and Communications Equipment			
No	**Activity Description**	**Code**	**Comments**
1	Check all communication equipment for proper operation.		
2	Check all fiber and copper cable connections.		
3	Inspect equipment for environmental damage.		
4	Remove unused equipment.		
5	Clean and dust equipment.		

Technician Name : Technician Signature :

FDOT District IV Preventive Maintenance Checklist
Portable Generator

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

Portable Generator			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	If deployed, ensure surrounding area is clear of garbage and foliage. Use weed killer as needed.		
3	Check engine oil level.		
4	Clean and vacuum the generator to remove dust and debris.		
5	Check fuel level and clean fuel Strainer if necessary. If deployed, refuel if tank is below 50% capacity.		
6	Check air cleaner.		
7	Prior to running the engine, turn the following on the "on" position: fuel valve lever, the throttle switch and the engine switch, then start generator.		
8	Let unit run for 15 minutes and during the period, plug in a load test device (i.e. UPS) to ensure load balance.		
9	Turn off fuel valve lever, unit will turn-off alone.		
10	After unit stalls, switch off throttle and engine switch		
11	Loosen carburetor drain screw to drain fuel from carburetor if applicable.		
12	Check for any fluid leak.		
13	If mounted on a trailer, check trailer condition including but not limited to tires, structure, mounting, connection, etc.		

Technician Name : Technician Signature :

FDOT District IV Preventive Maintenance Checklist
Permanent Generator

Device ID: _____ **Technician's**
Device Location: _____ **Name:**
Date (mm/dd/yyyy): _____
Roadway: _____
County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

Permanent Generator			
No.	**Activity Description**	**Code**	**Comments**
1	Visually check for physical damage.		
2	Ensure generator pad and surrounding area is clear of garbage and foliage. Use weed killer as needed.		
3	Check external conduits for rust,spray paint if needed.		
4	Check generator controller for alarms if applicable.		
5	Clean and vacuum the generator to remove dust and debris.		
6	Check fuel level, refuel if generator tank is under 90% capacity.		
7	Check battery voltage is within acceptable ranges.		
8	Check radiator (water level, pressure, coolant).		
9	Check belts and adjust as needed.		
10	Check hoses and clamps.		
11	Check operations of block heater.		
12	Check drip drain on exhaust		
13	Inspect exhaust sytem.		
14	Check electrical connections.		
15	Check for leaks.		
16	Check engine coolant temperature.		
17	Check safety shutdowns.		
18	Check automatic transfer switch operation.		
19	Verify generator is online and in standby mode on the monitoring software.		
20	Start generator and run for 10 minutes; inspect for leaks during operation.		
21	Ensure generator is shown as running on the monitoring software during the 10-minute run.		
22	After 10 minutes of operation, stop generator and verify it returns to resting state on the monitoring software.		
23	Confirm all generator doors are securely locked after maintenance is completed.		

Technician Name : Technician Signature :

FDOT TSM&O DISTRICT FOUR

FDOT District IV Preventive Maintenance Checklist
Pedestrian Flashing Beacons (RRFB)

SUNGUIDE

Device ID: _____ **Technician's Name:** _____

Device Location: _____ **Date (mm/dd/yyyy):** _____

Roadway: County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

RRFB for AC-Powered Systems- Mechanical Status			
No.	**Activity Description**	**Code**	**Comments**
1	Verify pole or post is sturdy.		
2	Remove vegetation from the structure and apply herbicide as needed.		
3	Verify signs and warning devices are securely mounted and oritented towards traffic.		
4	Verify AC breaker box is securely mounted.		
5	Clean front of signs.		
6	Verify AC conduit is securely connected to cabinet.		
7	Verify door locks/closures are functional and lubricated.		
8	Verify cabinet vents are clear of debris.		
9	Verify pest control is present.		
10	Verify all conduits are sealed to prevent pests from entering cabinet.		

RRFB for AC-Powered Systems- Electrical Status			
No.	**Activity Description**	**Code**	**Comments**
1	Record measured AC line voltage and verify it's within acceptable range.		
2	Record measured resistance from neutral to ground and verify it's within acceptable range.		
3	Record measured DC voltage without load connected.		
4	Record measured DC voltage with the load connected.		
5	Verify all LEDs illuminate .		
6	Verify all LEDs illuminate referencing system timing.		

RRFB for Solar-Powered Systems- Mechanical Status			
No.	**Activity Description**	**Code**	**Comments**
1	Verify pole or post is sturdy.		
2	Verify signs and warning devices are securely mounted and oritented towards traffic.		
3	Verify solar panel is securely mounted.		
4	Verify cabinet is securely mounted.		
5	Clean front of signs.		
6	Verify solar panel is aimed south and clear of debris.		
7	Verify door locks/closures are functional and lubricated.		
8	Verify cabinet vents are clear of debris.		
9	Verify pest control is present.		
10	Verify all conduits are sealed to prevent pests from entering cabinet.		

RRFB for Solar-Powered Systems- Electrical Status			
No.	**Activity Description**	**Code**	**Comments**
1	Record battery type.		
2	Record measured solar voltage. Make sure voltage is in acceptable range.		
3	Record measured battery voltage without solar panel connected.		

FDOT TSM&O DISTRICT FOUR

FDOT District IV Preventive Maintenance Checklist
Pedestrian Flashing Beacons (RRFB)

SUNGUIDE

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: County: _____

~~Codes: NA: Not Applicable; G: Good~~; NW: Not Working; P: Problem; R: Repaired

4	Record battery date (month/year).		
5	Verify all LEDs illuminate.		
6	Verify all LEDs illuminate referencing system timing.		

RRFB for Detection/Alerting Checks (If Equipped)- Thermal Sensors

No.	Activity Description	Code	Comments
1	Verify thermal sensor is securely mounted.		
2	Verify thermal image is clear and free of debris.		
3	Verify deteciton zones are placed and calibrated properly.		
4	Verify thermal zone detection via sensor's software and confirm detection activates warning devices.		

RRFB for Detection/Alerting Checks (If Equipped)- Wireless Infrared Bollards

No.	Activity Description	Code	Comments
1	Verify bollards are securely mounted.		
2	Replace battery in each wireless bollard if necessary.		
3	Verify bollards' or window is clean and free of debris.		
4	Verify detection of each bollard pair and activation of warning devices.		

RRFB for Detection/Alerting Checks (If Equipped)- Radar/Infrared Sensors

No.	Activity Description	Code	Comments
1	Verify sensors are securely mounted.		
2	Clean sensors' detection lenses.		
3	Validate detection coverage area and adjust as needed.		
4	Verify a detection activates system.		

RRFB for Activation Checks (If Equipped)- Push Buttons

No.	Activity Description	Code	Comments
1	Verify push button is securely mounted.		
2	Verify push button is operating as designed.		
3	Verify push button is properly powered.		
4	Verify push button properly activates warning devices.		

RRFB General Checks

No.	Activity Description	Code	Comments
1	Remove weeds and trim grass around cabinet and trim tree branches within 3 feet of the cabinet.		
2	Ensure all cabinets are neat and clean in appearance.		
3	Check for broken and damaged pull boxes.		
4	Remove graffiti as needed		
5	Wipe down all accessible equipment areas, racks, and shelves.		
6	Vacuum and wipe dust from all devices inside and outside the cabinet including screens, filter holders, louvers and screens covering filter holders.		
7	Remove any unused old equipment and hardware.		

FDOT District IV Preventive Maintenance Checklist
Pedestrian Flashing Beacons (RRFB)

Device ID: _____ **Technician's Name:** _____
Device Location: _____ **Date (mm/dd/yyyy):** _____
Roadway: County: _____

Codes: NA: Not Applicable; G: Good; NW: Not Working; P: Problem; R: Repaired

8	Check cabinet filter; replace if necessary. Ensure fans are operational (if equipped).		
9	Inspect locking mechanisms and lubricate locks and doors.		
10	Check for watertight cable and conduit connections.		
11	Check door seal.		
12	Check indicator lights on devices for abnormalities.		
13	Check all connectors and wire terminals for tightness.		
14	Check the integrity of grounding connections and lightning protection.		
15	Check for any loose nuts and bolts, and tighten them.		
16	Check that power and control cables are grouped, bundled, and labeled clearly.		
17	Check that wiring is free of damage, wear, corrosion, overheating, loose wiring, and disconnected items.		
18	Verify functionality of door sensors.		
19	Remove trash, if required.		
20	Scan all Inventory Assets at the cabinet.		
Uninterruptible Power Supply (UPS) (If applicable)			
21	Ensure that UPS is not by-passed.		
22	Check for leaks or damage to batteries.		
23	Check if UPS is online via SNMP module.		
24	Initiate UPS test cycle by turning off AC input power to UPS for 15 minutes.		
25	Verify UPS battery level. Replace battery if necessary.		
26	If external batteries are present, check all connections are corrosion-free and battery fuses are intact.		

Technician Name : Technician Signature :