Florida Department of Transportation District 6
ITS Maintenance Program

Florida ITE Conference 2018
October 31, 2018

Michael Bermudez - ITS Maintenance Contract Project Manager
Agenda

- Contract Overview
- ITS Device Failure Response Times
- FDOT District Six ITS Infrastructure
- Special Projects
- Look Ahead
- Questions
Notice to proceed July 1, 2017
5 year contract with option for renewal
Program consists of Express Lanes, and General Purpose Lanes and Arterials
Performance based contract
24/7 Operation
All failure tickets are reported through the Operations Task Manager software (OTM)
All tickets must be acknowledged within 15 minutes
Ticket classification (Critical or Non-Critical)
Lump sum unit rates & time and materials
ITS Device Failure Response

1. **Express Lanes CRITICAL FAILURE**
   - Reported to Maintenance

2. **Initial Acknowledgement**
   - Within 15 minutes

3. **On-site arrival**
   - 1 hour from failure notification

4. **Repair Time**
   - 4 hours from failure notification
   - MINOR: $1000
   - MAJOR: $50/hr

5. **Repair Classification**
   - MINOR
   - MAJOR

6. **Diagnostic Report**
   - 4 hours Miami-Dade from failure notification
   - $100/day

7. **Final Repair Report**
   - 72 hours after repair completion
   - Miami-Dade
   - $100/day
FDOT District Six ITS Infrastructure

- Closed Circuit Television (CCTV) Cameras – 331
- Adaptive Signal Control Technology System – 29
- Dynamic Message Signs (DMS) – 177
- Microwave Vehicle Detection System (MVDS) - 394
- Ramp Metering System (RMS) – 22
- Monroe County Traffic Signal System - 51
- HUB (Equipment Shelter Building) – 12
- Warning Gates (WG) - 3
- Wireless Communication System
- Fiber Optic Cable miles - 89
Closed Circuit Television (CCTV)

**Applications**
- Traffic Monitoring
- Lane Status Verification
- Toll Amount Verification
- Ramp Meter Verification

**ITS Maintenance Services**
- Preventive Maintenance
- Repair & replacement
- All Express Lanes CCTV’s are considered “Critical”
- Coordination with ongoing CCTV replacement contract

**Challenges**
- Analog to HD conversion requires extensive labor
- Wear and tear of lowering device system
- CCTV’s with no lowering device system
Adaptive Signal Control Technology (ASCT)

Applications
- Video detection
- Preventive Maintenance
- Repair & replacement services
- Wireless System

ITS Maintenance
- Coordination with other agencies
- Only IMSA level II can perform electrical work
- Maintenance of Traffic (MOT)
Dynamic Message Signs (DMS)

Applications
- Freeway and Arterials
- Lane Status
- Toll Amount

ITS Maintenance Services
- Preventive Maintenance
  - Cabinet & sign level
- Repair & replacement

Challenges
- All DMS are considered “Critical”
- Maintenance of Traffic (MOT)
- Express Lanes closure
Microwave Vehicle Detection System (MVDS)

Applications
- Freeway and Arterials
- Express Lanes
- Ramp Metering

Challenges
- Device calibration must be at 95% Volume accuracy per lane
- Calibration must be performed during non-peak hours for optimal results
- Various technologies & configurations

ITS Maintenance Services
- Preventive Maintenance
  - Includes Calibration
- Repair & replacement
Ramp Metering System (RMS)

Applications

• Limits vehicle demand entering the highway
• Maintains better traffic flow
• Incident Management

ITS Maintenance Services

• Preventive Maintenance
• Repair & replacement services

Challenges

• Critical Repair
• Dependent of other devices (MVDS & Loops)
• Extensive Repair time
Monroe County Signal System

**ITS Maintenance Services**
- Preventive Maintenance
- Repair & replacement services
- Infrastructure upgrades
  - Router system implementation
  - UPS back up system
  - Site cabinet alarm integration

**Challenges**
- Distance from TMC
- Access to warehouse and equipment storage
- Adopting a new system and the learning curve
- Portable traffic signal deployment
### Application
- Interconnection point between roadways
- Redundant path of data transfer

### ITS Maintenance Services
- Monthly Preventive Maintenance
- Repairs

### HUB
(12 - Equipment Shelter Buildings)

<table>
<thead>
<tr>
<th>HUB name</th>
<th>Generator</th>
<th>Tank Capacity</th>
<th>Fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>US-1 NORTH</td>
<td>Kohler, 10 kW</td>
<td>40 Gallons</td>
<td>Diesel</td>
</tr>
<tr>
<td>GGI PARK AND RIDE</td>
<td>Generac, 25 kW,</td>
<td>1,892.5 Liters</td>
<td>Propane</td>
</tr>
<tr>
<td>SR 836 &amp; I-95 HUB</td>
<td>Cummins, 25 kW,</td>
<td>240 Gallons</td>
<td>Diesel</td>
</tr>
<tr>
<td>SR 826 &amp; I-75 HUB</td>
<td>Generac, 25 kW</td>
<td>1,892.5 Liters</td>
<td>Propane</td>
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<tr>
<td>US-1 SOUTH HUB</td>
<td>Kohler, 10 kW</td>
<td>40 Gallons</td>
<td>Diesel</td>
</tr>
<tr>
<td>FLORIDA CITY HUB</td>
<td>Generac, 25 kW</td>
<td>1,892.5 Liters</td>
<td>Propane</td>
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<tr>
<td>SR 112 HUB</td>
<td>Generac, 25 kW</td>
<td>1,892.5 Liters</td>
<td>Propane</td>
</tr>
<tr>
<td>WHATLEY HUB</td>
<td>Cummins, 25 kW</td>
<td>240 Gallons</td>
<td>Diesel</td>
</tr>
<tr>
<td>N/A (Generator on I-95 E.L. Phase II)</td>
<td>Kohler, 40 kW</td>
<td>253 Gallons</td>
<td>Diesel</td>
</tr>
<tr>
<td>E. L. I-95 Phase II Miami Gardens</td>
<td>Kohler, 100 kW</td>
<td>650 Gallons</td>
<td>Diesel</td>
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<tr>
<td>Express Lane North Bound HUB</td>
<td>Generac, 80 kW</td>
<td>500 Gallons</td>
<td>Diesel</td>
</tr>
<tr>
<td>Express Lane South Bound HUB</td>
<td>Generac, 80 kW</td>
<td>500 Gallons</td>
<td>Diesel</td>
</tr>
</tbody>
</table>

### Challenges
- Potential exposure to major device outages
- Failure of HUBs air conditioning system
Special Projects

- ASCT video detection grounding & alignment
- Florida Keys infrastructure restoration
- Florida Keys wireless communication restoration
ASCT Video Detection Grounding

What is the issue?
• Re-occurring CCTV failures

What is the benefit?
• Reduction of CCTV failures due to power surges
ASCT Video Detection Alignment

Before

ASCT Video Detection System (SW 8th Street)

After
Florida Keys Restoration
Segment A
(Florida City HUB to Key Largo)
US-1 (M.M.100 to M.M.127)

Devices Restored

✓ 20 CCTV’s
✓ 5 DMS
✓ 2 Flashing Beacons
✓ 2 MVDS
Wireless Link from Florida City HUB to CCTV#333

US-1 (M.M.127 to M.M. 100)

The ITS Maintenance Team Restored Power & Communications Back
Power and Communication Restoration (DMS & CCTV)

DMS# 61/62 & CCTV# 343
Look Ahead Fiscal Year 2018 / 2019

- Bench Test Lab: Troubleshooting & training
- Portable CCTV/MVDS & DMS: To be deployed to any site within the District
- Drone: Site & field verification
- Internal Software Platform: Streamline internal documentation.
- IP Cabinet Access
- Body Cam: To be tested for troubleshooting, training & field verification.
Thank you!