Specifications

for

Ground Transportation Management System

for

Fort Lauderdale-Hollywood International Airport

Monday, October 21, 2013
# TABLE OF CONTENTS

## PART 1 GENERAL

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>PROJECT SUMMARY</td>
<td>1</td>
</tr>
<tr>
<td>1.2</td>
<td>CURRENT AIRPORT GROUND TRANSPORTATION OPERATIONS</td>
<td>1</td>
</tr>
<tr>
<td>1.3</td>
<td>DEFINITION OF TERMS</td>
<td>4</td>
</tr>
<tr>
<td>1.4</td>
<td>RELATED DOCUMENTS</td>
<td>6</td>
</tr>
<tr>
<td>1.5</td>
<td>SUBMITTALS</td>
<td>6</td>
</tr>
<tr>
<td>1.6</td>
<td>SYSTEM DEMONSTRATION</td>
<td>7</td>
</tr>
<tr>
<td>1.7</td>
<td>QUALITY ASSURANCE</td>
<td>7</td>
</tr>
<tr>
<td>1.8</td>
<td>SYSTEM INSTALLATION PLAN</td>
<td>8</td>
</tr>
<tr>
<td>1.9</td>
<td>EQUIPMENT DELIVERY AND STORAGE</td>
<td>9</td>
</tr>
<tr>
<td>1.10</td>
<td>PROJECT SITE/SITE CONDITIONS</td>
<td>10</td>
</tr>
<tr>
<td>1.11</td>
<td>PROJECT INFORMATION</td>
<td>11</td>
</tr>
<tr>
<td>1.12</td>
<td>WARRANTY AND PREVENTITIVE MAINTANENCE (PM)</td>
<td>13</td>
</tr>
<tr>
<td>1.13</td>
<td>OPTIONAL WARRANTY AND MAINTENANCE</td>
<td>22</td>
</tr>
<tr>
<td>1.14</td>
<td>ELECTRONIC FILES</td>
<td>22</td>
</tr>
</tbody>
</table>

## PART 2 GTM SYSTEM REQUIREMENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>GTM SYSTEM HARDWARE</td>
<td>23</td>
</tr>
<tr>
<td>2.2</td>
<td>COMMUNICATIONS</td>
<td>32</td>
</tr>
<tr>
<td>2.3</td>
<td>ELECTRICAL</td>
<td>33</td>
</tr>
<tr>
<td>2.4</td>
<td>MOUNTING STRUCTURES</td>
<td>33</td>
</tr>
<tr>
<td>2.5</td>
<td>SOFTWARE – BASE SYSTEM</td>
<td>33</td>
</tr>
<tr>
<td>2.6</td>
<td>SOFTWARE INTEGRATION OF HANDHELD READERS</td>
<td>39</td>
</tr>
<tr>
<td>2.7</td>
<td>SOFTWARE – DISPATCH MODULE OPTION</td>
<td>39</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>2.8 CUSTOMER WEB INTERFACE OPTION</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>PART 3 EXECUTION</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>3.1 VERIFICATION OF SITE CONDITIONS</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>3.2 INSTALLATION</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>3.3 TESTING</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>3.4 INSTRUCTION AND TRAINING</td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>
PART 1 GENERAL

1.1 PROJECT SUMMARY

A. SP Plus Curbside Management Joint Venture (SP PLUS), on behalf of Broward County, is seeking qualified vendors to submit proposals to provide a Ground Transportation Management System (GTM System) including all associated readers, mounting hardware, routers, firewalls, software, servers and personal computers, etc. for Fort Lauderdale-Hollywood International Airport (Airport).

B. The successful bidder shall have successfully completed at least one airport GTM System project meeting each functional specification described in these Specifications within the last five years that is capable of tracking, dispatching, reporting activity, and facilitating revenue collection from commercial vehicle operators including taxicabs, on-demand shared-ride vehicles, rental car shuttle buses, pre-arranged vehicles, hotel/motel/off airport parking shuttles, charter buses, and other commercial vehicles that operate at the Airport.

C. The selected Vendor shall provide a turnkey GTM System including all hardware, software and mounting brackets necessary to deliver a fully functioning GTM System as described in these Specifications and in the project drawings for the Automated Vehicle Identification Infrastructure dated August 21, 2012 (“Construction Documents”), copies of which are available upon request to SP PLUS Vendor shall provide 100% installation documents (based on these Specifications), permitting, installation, training, warranty, and maintenance as called for in these Specifications and the Contract.

1.2 CURRENT AIRPORT GROUND TRANSPORTATION OPERATIONS

A. Current Commercial Airport Ground Transportation Providers

1. Current commercial ground transportation services at the Airport include:

   i. Taxicabs

   ii. On-demand shared ride vehicles (vans/sedans/limousines)

   iii. Off-site rental car company shuttles

   iv. Pre-arranged limousines/sedans/vans

   v. Hotel/motel/off-airport parking shuttles

   vi. Charter (including cruise) buses

   vii. On-Airport Consolidated Rental Car Facility shuttles

   viii. Airport Economy Parking Lot shuttles
ix. Airport Inter-Terminal shuttles

x. Broward County Transit buses

xi. Tri-Rail buses.

2. Commercial vehicles currently are registered and issued permits to operate at the Airport either through SP PLUS and/or Broward County Permitting, Licensing and Consumer Protection Division, depending on the vehicle classification/type.

B. Airport Terminal Staging

1. There are five Terminal staging areas, or Ground Transportation Areas (GTAs), throughout the Lower Level of the Terminal roadway that are utilized by designated commercial vehicles. GTA 0 serves Terminal 1; GTA 1 serves Terminal 2; and GTA 2 serves Terminal 3 as well as Terminal 4. GTA 3 is currently used by Consolidated Rental Car Facility buses only, but will be used in the future to serve Terminal 4. GTA 4 is currently unavailable due to construction and has been used to handle overflow charter buses.

2. Currently, pre-arranged vehicles including limousines, vans and sedans are required to park in the Terminal Garages, pay standard parking fees and collect their passengers in the Baggage Claim Areas.

C. Airport Ground Transportation Operations

1. BCAD has contracted with SP PLUS to manage and operate the curbside management program for commercial vehicles at the Airport. To date, SP PLUS has assumed taxicab dispatch operations, management of the access control and billing for taxicabs, registration of taxicabs and certain classifications of charter buses, management and operation of the Commercial Vehicles Holding Lot and curbside monitoring of charter buses. SP PLUS will be assuming additional responsibilities, including but not limited to registration of various additional classifications of commercial vehicles, management and operation of Commercial Vehicles Information Booths being constructed in the Baggage Claims areas of the Terminals, and monitoring of Commercial Vehicles Loading Zones (CV Loading Zones) on the Lower Level roadway.

2. Broward County currently has a concession agreement with GO Airport Shuttle covering on-demand shared ride operations.

D. Commercial Vehicles Holding Lot (Holding Lot)

1. The Holding Lot currently is situated in the northwest quadrant of the Airport off Perimeter Road (see attached map). Taxicabs use a CTR
proximity card system (administered by SP PLUS) to enter the Holding Lot, and are manually dispatched to either to GTA 0, where they will either pick up a fare or be dispatched to GTAs 1, 2 or 3 as directed by SP PLUS Dispatchers, or directly to a designated GTA. Taxicabs are charged a Trip Fee upon entering the Holding Lot. Upon exiting the Holding Lot, taxicabs are issued a ticket. SP PLUS Dispatchers collect and verify ticket information to ensure that taxicabs have not bypassed the Holding Lot or proceeded to the wrong GTA.

2. During certain peak times when the Airport experiences a diminished supply of taxicabs, the system is “opened” and taxicabs are routed directly to the GTAs, permissibly bypassing the Holding Lot.

3. GO Shuttle on-demand shared ride vans, sedans and limousines and County permitted charter buses also utilize the Holding Lot, although these permitted vehicles do not utilize the CTR entry/exit system. They operate under their own independent dispatch systems.

E. Rates and Revenue Collection

1. Taxicab Dispatch Companies pay an annual fee of $50.00 per taxicab and are charged a $3.50 Trip Fee for each pick-up, which Trip Fee is charged upon entry to the Holding Lot. A $354.00 security deposit is required per taxicab.

2. GO Shuttle on-demand shared ride vehicles operate under a concession agreement with Broward County which provides for a negotiated privilege fee based on deplaned passengers.

3. Other commercial vehicle operators are charged as follows:
   i. Shuttles carrying up to 19 passengers (excluding driver): $50 annual Airport registration fee.
   ii. Shuttles carrying 20-26 passengers (excluding driver): $50 annual Dispatch Company registration fee; $10 annual per vehicle decal fee; and $6 Trip Fee (pick-up and drop-off). Trip Fees are recorded and paid on an Honor System.
   iii. Charter buses carrying 27+ passengers: $50 annual Dispatch Company registration fee; $10 annual per vehicle decal fee; and $10 Trip Fee (pick-up and drop-off). Trip Fees are recorded and paid on an Honor System.
   iv. Prearranged vans/sedans/limousines: $50 annual per vehicle decal fee; must park in Terminal Garages and pay current parking rates.
v. Cruise (charter) buses operating between the Airport and Port Everglades are exempt from registration and other fees.

vi. Hotel/motel shuttles pay an annual $50 per vehicle decal fee. There are no Trip Fees.

vii. Off-Airport Parking shuttles pay 4% of their revenue up to $20,000 reported to BCAD then 8% on anything over $20,000

viii. On-Airport Consolidated Rental Car Facility shuttles, On-Airport Economy Parking Lot shuttles, Airport Inter-Terminal shuttles, Broward County Transit Buses and Tri-Rail buses pay no direct fees.

F. F. Estimated Trip Information

Estimated annual trips (based upon historical taxicab trips and consultant estimates for other commercial vehicle trips) are as follows: taxicabs – 600,000; on-demand shared ride vans – 90,000; on-demand private cars – 190,000; pre-arranged private cars and vans – 300,000; hotel/motel courtesy – 150,000; off-Airport parking shuttles – 70,000; charter buses – 10,000. Total: 1,410,000.

1.3 DEFINITION OF TERMS

Acts of God – Occurrences, out of the control of the Vendor, of unusual or unexpected severity. Acts of God include acts of terrorism, vandalism, and severe weather phenomena including hail, flooding, hurricanes, tornados, fire, earthquakes, and lightning strikes.

Airport – Fort Lauderdale-Hollywood International Airport; also referred to as FLL.

AVI – Automated Vehicle Identification: a technology whereby an RFID antenna, focused on a specific drive lane, can detect and record passing vehicles that are equipped with an associated RFID transponder, such as a toll tag.

BCAD – Broward County Aviation Department

Contract – The Contract for Purchase and Installation of Ground Transportation Management System to be entered into between SP PLUS and the successful proposer

County – Broward County

GTM System – Ground Transportation Management System: A System comprised of hardware and software that is capable of tracking, dispatching, monitoring access, reporting activity, and facilitating revenue collection from commercial vehicle operators.

Dynamic Displays – Signage capable of displaying varying text and/or graphics in order to relay specific messages. Dynamic Displays can be used for various applications
including displaying the specific taxicabs being called to the curb as part of a dispatch operation.

**FLL** – Fort Lauderdale-Hollywood International Airport; also referred to as *Airport*.

**GTA** – Ground Transportation Area – GTAs are areas within the Airport’s Lower Level Terminal roadway that are used for queuing and staging of commercial vehicles.

**IP** – Internet Protocol – IP is a network layer protocol in the Internet protocol suite and is encapsulated in a data link layer protocol (e.g., Ethernet). As a lower layer protocol, IP provides the service of communicable unique global addressing amongst computers.

**NEMA** – National Electrical Manufacturer’s Association, an association that develops standards related to the generation, transmission, distribution, control, and end-use of electricity.

**PABP** – Payment Application Best Practices - a set of best practices developed by Visa® to assist software vendors in creating secure payment applications that help merchants and agents support overall compliance with the PCI DSS.

**PA DSS** – Payment Application Data Security Standard – a set of comprehensive data security requirements for payment applications based on Visa’s® PABP; PA DSS was released in 2008.

**PCI DSS** – Payment Card Industry Data Security Standard – a set of comprehensive requirements for enhancing payment card account data security to help facilitate the broad adoption of consistent data security measures on a global basis. PCI DSS was the precursor to PA DSS.

**RAID** – Redundant Array of Independent Disk – a technology that employs the simultaneous use of two or more hard disk drives to achieve greater levels of performance, reliability, and/or larger data volume sizes. The phrase "RAID" is an umbrella term for computer data storage schemes that can divide and replicate data among multiple hard disk drives. RAID's various designs all involve two key design goals: increased data reliability and increased input/output performance. When several physical disks are set up to use RAID technology, they are said to be in a RAID. This array distributes data across several disks, but the array is seen by the computer user and operating System as just one, single disk.

**RFID** – Radio Frequency Identification – the technology utilized by AVI Systems, such as SunPass™, and proximity card systems, such as HID™, Transcore, or PayPass™, for identifying a system credential.

**SNMP** – Simple Network Management Protocol - SNMP forms part of the internet protocol suite and is used in network management systems to monitor network-attached devices for conditions that warrant administrative attention.
SP PLUS – SP Plus Curbside Management Joint Venture: the entity responsible for management of this Project

UPS – Uninterruptible Power Supply – a UPS is a device that maintains a continuous supply of electric power to connected equipment by supplying power from a separate source when utility power is not available; also known as a continuous power supply or a battery backup.

1.4 RELATED DOCUMENTS
A. Construction Documents
B. Contract (including Exhibits)

1.5 SUBMITTALS
A. To be included in the Proposal:
   1. A detailed description of the base GTM System with provisions for optional features, functionalities, and/or components. Those components listed as “optional” in these Specifications shall be priced as separate line items from the base GTM System. Optional items will be selected at the sole discretion of SP PLUS.
   2. A description of the proposed GTM System hardware, including catalog cuts and shop drawings as provided in Part 2 of these Specifications.
   3. A description of the proposed base GTM System software as provided in Part 2 of these Specifications.
   4. Proposed training manuals.
   5. Sample reports.
   6. Proposed start-up plan including a schedule for submittal and review of post-Contract award submittals as provided below.

B. To be provided following award of Contract:
   1. Complete electrical connection plans.
   2. Signage plan for the bus entrance on the Upper Level roadway at the northeast corner of the Cypress Garage (aka Second Level Busway).
   3. Mounting bracket design for antennas for connection to infrastructure.
   4. Updated start-up plan – including installation schedule, time of day when work will take place for each task, and mitigation of traffic (MOT) plans.
5. Field equipment naming.
6. Training schedule.
7. System testing procedures.

C. To be provided before final inspection:
   1. User manuals
   2. Maintenance manuals
   3. As-built drawings
   4. Maintenance log

1.6 SYSTEM DEMONSTRATION

Each proposer that is found to be both responsive and responsible to the requirements of this RFP will have an opportunity to make an oral presentation to the Evaluation Committee (EC) on the proposer’s approach to this Project and its ability to perform. Each proposer will be required to present a live demonstration of its offered solution. The intent of the demonstration is to ensure that the proposed GTM System is capable of providing all features and functionalities described in these Specifications. GTM System demonstrations shall be conducted in the vicinity of the Airport at a location to be designated by SP PLUS.

SP PLUS reserves the right to contact and/or visit any airport listed as a reference by the proposer to view the proposer’s operating system.

1.7 QUALITY ASSURANCE

A. All GTM System components and their installation shall comply with all laws, ordinances, codes, rules, and regulations of public authorities having jurisdiction over the work. It shall be the responsibility of the successful proposer (Vendor) to meet all other technical, performance and safety standards that are applicable to all components of the entire GTM System, even when not specifically referenced. It shall be the Vendor’s responsibility to obtain at Vendor’s expense any and all permits required to complete the work.

B. The GTM System shall be an open-architecture System where all interfaces (hardware and software) conform to national and International Standardization Organization (ISO) standards.

C. All materials and equipment shall be listed, labeled and/or certified by a nationally recognized testing laboratory to meet Underwriters Laboratories, Inc. (UL) standards where test standards have been established. Equipment and materials which are not covered by UL Standards will be accepted provided
equipment and material is listed, labeled, certified or otherwise determined to meet safety requirements of a nationally recognized testing laboratory. Equipment of a class for which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe, will be considered if inspected or tested in accordance with national industrial standards, such as NEMA or ANSI. Evidence of compliance shall include certified test reports and definitive shop drawings.

D. The Vendor’s infrastructure, hardware, and all software, as it pertains to credit card data storage and processing, shall conform to PCI standards (PCI DSS, PA DSS, etc.) and be PCI certified.

All necessary credit card components in the access and revenue control system and processes must comply with all PA-DSS, FACTA regulations and credit card PCI rules and practices including (Visa/Mastercard’s CISP program, Discover’s DISC program and American Expresses DSOP program) to accomplish this, the following is required:

NOTE: If SP PLUS is the Merchant of Record (SP PLUS's Merchant ID), it is the responsibility of Vendor to complete the below tasks.

- Install and manage hardware firewall device. SP PLUS uses Sonic Wall Firewalls typically, with centralized management console.
- Use only approved dual-layer authentication remote management software. SP PLUS uses Webex to be installed by installation vendor.
- Configure password encryption and password management on GTM System computers.
- Complete signed a signed Service Provider Agreement to insure PCI compliance throughout maintenance and installation of equipment. This legal document is a one-time signed document between SP PLUS and the Vendor that states that it will do nothing through out the installation and maintenance of the GTM System to render it non-compliant.

1.8 SYSTEM INSTALLATION PLAN

A. Vendor and SP PLUS shall participate in an Installation Plan Review (IPR) prior to the installation of the GTM System. IPRs shall be conducted for each phase selected for implementation by County (base system and optional commercial vehicle dispatch system, if selected).
B. No later than 30 calendar days prior to the IPR, the Vendor shall submit the IPR plan to SP PLUS for review and approval. Required documentation shall demonstrate to SP PLUS that the proposed GTM System meets the requirements outlined in these Specifications. IPR documentation to be submitted for review by SP PLUS shall include:

1. Overall description of the GTM System and GTM System components
2. System schematics, block diagrams, interconnection diagrams, and flow charts
3. Specifications or cut sheets for all proposed components and installation procedures
4. Report samples for the specified reports and proposed formats for any new reports
5. Software design approach, database design, and list of all software
6. Data flow and data structure diagrams
7. Detailed description of GTM System architecture, GTM System servers, network components, network connections to BCAD’s network, and communications
8. User screen formats detailing user functionality
9. Proposed operational procedures
10. Detailed description of each function and operation, described in sequence and encompassing all GTM System hardware and software components
11. Description of the testing plan including Vendor’s internal testing plan, Site Acceptance Test (SAT) and Operational Demonstration Test (ODT)
12. Completed installation drawings for electrical, hardware and communications

C. Vendor shall facilitate and conduct the IPR at the Airport or at a location approved by SP PLUS.

1.9 EQUIPMENT DELIVERY AND STORAGE

A. Vendor shall be responsible for insuring all shipped items. Any items damaged during shipping shall be replaced and shipped to the Airport, by expedited means if requested, at no additional cost to SP PLUS.
B. SP PLUS and/or the County shall provide the Vendor with a designated storage/staging area for GTM System equipment that has not been installed. The location of this area shall be designated by SP PLUS and/or the County. The Vendor shall include in their Proposal the square footage that the area needs to be, and what is planned to be stored in the area. It shall be the Vendor’s responsibility to protect the equipment from theft and damage until final acceptance including installation of fencing, locks, and any other security provisions. Should the stored equipment be stolen or damaged prior to final acceptance, the Vendor shall replace the equipment at no additional cost to SP PLUS.

1.10 PROJECT SITE/SITE CONDITIONS

A. Environmental Conditions: All field equipment and components shall be fully protected from the ambient environment. As such, the Vendor shall furnish and install proper housings and NEMA enclosures where required to protect the equipment from environmental conditions that would, otherwise, affect the performance and operation of the equipment. Operation of the equipment shall not be affected in any way by normal weather conditions. In addition, operation of the equipment shall not be affected in any way by the conditions listed below:

1. Ambient Temperatures: -10°F to 120°F (with addition of solar loading)
2. Humidity: 0% to 100% (non-condensing)
3. Rain and wind: blowing rain with 115 mph gusts
4. Dust: blowing dust and fine sand
5. RFI/EMI: Airport standard environment

B. The equipment shall be electromagnetically compatible with other equipment at the Airport including radio frequency emissions. The equipment shall not be susceptible to noise induced from the emissions of Electro Magnetic Interference (EMI) of high power radar, navigation aids, and radio equipment normally utilized at the Airport.

C. Environmental conditions shall not inhibit the GTM System from performing in accordance with these specifications. The Vendor shall provide a GTM System such that environmental conditions in a cabinet or NEMA enclosure shall not cause failure of the installed electronics. Vendor shall provide appropriate heating and/or cooling devices where environmental conditions inside of a cabinet or NEMA enclosure exceed the manufacturers’ safe operating limits of the components inside.

D. Electrostatic and electromagnetic forces within the environment, e.g., non-direct lightning strikes, or other types of power interference shall have no effect upon the integrity or operation of the GTM System. The Vendor’s solution for
preventing power interference shall be presented to SP PLUS for approval prior to implementation. Lightning protection through surge arrestors, earthen ground rods, or a combination thereof shall be provided and installed for the GTM System. The Vendor shall determine, based upon its GTM System requirements, the appropriate lightning protection method to use for the location where the equipment is installed. Equipment shall be UL approved for use as part of a master labeled lightning protection GTM System and marked in accordance with UL procedures.

1.11 PROJECT INFORMATION

A. Base System

1. The intent of the base GTM System is to track and report commercial vehicle activity on the Airport roadway, including the Holding Lot and GTAs and CV Loading Zone, and to provide a mechanism to facilitate billing for various fees through the PROPworks® billing system.

2. The base GTM System hardware shall include the following, at a minimum:

   i. Multiprotocol readers installed at the following locations shall be Transcore Encompass 5 capable of reading the SunPass toll tag.

      a. Perimeter Road Entrance to Terminal Drive (See Construction Documents Sheet No. CS1.01 - 1 Reader)

      b. Perimeter Road Entrance and Exit to Parking Access Road (See Construction Documents Sheet No. CS1.01 - 2 Readers)

      c. Airport Entrance Roadway (Upper Level) (See Construction Documents Sheet No. CS1.01 – 6 Readers)

      c. South Service Road (See Construction Documents Sheet No. CS1.06 - 1 Reader)

      e. Lower Level Terminal Drive in front of T4 (immediately east of the parking exit lane from the toll plaza) mounted on existing upper level roadway structure (See Construction Documents Sheet No. CS1.08 - 4 Readers)

      f. Outbound Loop (lower Level Terminal Drive (See Construction Documents Sheet No. CS 1.06 - 5 Readers)

      g. Entrance to GTA 0 (See Construction Documents Sheet No. CS1.01 – 1 Reader)
h. GTA 1 Entrance (See Construction Documents Sheet No. CS1.03 – 1 Reader)

i. GTA 2 Entrance (See Construction Documents Sheet No. CS1.04 - 1 Reader)

j. GTA 3 Entrance (See Construction Documents Sheet No. CS1.05 - 1 Reader)

k. Holding Lot (See Construction Documents Sheet No. CS1.07 – 2 Readers)

l. Entrance to busway on level 2 of RCC Facility (See Construction Documents Sheet No. CS1.01 – 1 Reader)

ii. Three barrier gates, protective bollards, flexible bollards, loop detectors and signage (2 at the Holding Lot and 1 at the Busway Level) to control access to these areas. See Sections 2.1.D and 2.1.E for antenna and reader requirements. See Sections 2.1.H and 2.1.I for barrier gates and vehicle detection requirements.

iii. Wireless handheld AVI readers described in Section 2.1.G used for curbside identification of vehicles - 5 Readers

iv. GTM System servers as described in Section 2.1.B

v. GTM System workstations as described in Section 2.1.C

vi. UPS units at the base System computer servers and read locations. See Section 2.1.F for UPS requirements.

3. GTM System software meeting the requirements outlined in Section 2.5.

4. Maintenance and support obligations as set forth in the Software License, Maintenance and Support Agreement attached as Exhibit F to the Contract.

5. Two Year Parts and Labor Warranty as described in Section 1.12

B. Options

1. A Commercial Vehicle Dispatch module which would be used to dispatch commercial vehicles and monitor and control staging. The optional Commercial Vehicle Dispatch module shall include the GTM System Commercial Vehicle Dispatch software meeting the requirements outlined in Section 2.7 and a warranty for said software.
2. An Integrated billing system that is used to process invoices and payment through the GTM System. See Section 2.5.F.3

3. An external web interface for commercial vehicle operators to view and manage their GTM System accounts as described in Section 2.8

4. An extended warranty period and extended maintenance services period as described in Section 1.13

1.12 WARRANTY AND PREVENTITIVE MAINTENANCE (PM)

A. The Vendor shall provide a mandatory two year (24 month) warranty. The cost of this warranty cost shall be included in the Vendor’s proposal. The warranty period on the GTM System shall begin after final acceptance as outlined in Section 3.3.E.

B. The Vendor shall warranty all parts, materials and workmanship following final acceptance of the GTM System. See Section 3.3.E for Final Acceptance requirements. All inclusive costs (parts, warranty repairs, labor, Vendor travel time, Vendor expenses, etc.) incurred during the warranty period shall be provided without additional cost to SP PLUS. Costs (time and material) for repair or parts replacement, components, etc., damaged or rendered unserviceable due to apparent and provable misuse, abuse, vandalism or negligence by SP PLUS and/or the County or SP PLUS and/or the County contractor employees or the using public are excluded as a warranty item. Also excluded from the warranty are damages due to Acts of God.

C. Warranty services to be provided by the Vendor’s technicians during the warranty period shall include preventive and emergency maintenance service. The Vendor shall submit, as part of their proposal, the manufacturer’s recommended preventive maintenance services and procedures manuals for all components, including those components not manufactured by the Vendor.

D. Preventive Maintenance Plan. The Proposer shall submit a proposed manufacturer-approved Preventive Maintenance Plan for all hardware and software required in these Specifications that insures all hardware and software operate as designed and specified. The Proposer shall submit the Preventive Maintenance Plan as part of their Proposal. Preventive Maintenance services shall include but are not limited to inspection, testing, necessary adjustment, alignments, lubrication, parts cleaning, battery refresh, communication system maintenance, server administration, database administration, and application support of the GTM System hardware and software. SP PLUS reserves the right to modify any portion of the Preventive Maintenance Plan throughout the life of the Contract. Preventive Maintenance services shall be performed on each hardware and software component of the GTM System in accordance with the approved Preventive Maintenance Plan. The Vendor shall provide a list of
Preventive Maintenance tasks and frequencies for each component, to include daily, weekly, bi-weekly, monthly, quarterly, semi-annual, and annual overhauls.

1. Preventive Maintenance shall be scheduled to the greatest extent possible during non-peak periods. The Vendor shall consult with SP PLUS to determine periods of peak activity for the various devices.

2. All scheduled maintenance shall be coordinated with SP PLUS. Scheduled maintenance services shall follow these general procedures:
   i. Prepare – This includes reading and becoming familiar with all manuals and materials concerning the equipment and software applications, ensuring safety precautions are taken, obtaining all tools, taking the equipment out of service, initiating service documentation, and updating the Maintenance Log.
   ii. Visually Inspect – Includes checking for loose wires, missing hardware, structural damage, damaged cables, cracked displays, peeling labels, rust, etc.
   iii. Service and Repair - This includes performing the service and repairing items noted as faulty during the inspection.
   iv. Test – This includes testing the equipment to ensure functionality in accordance with the design documents submitted by Vendor.
   v. Return to Service – Once testing is complete and successful the technician shall return the equipment back into service.
   vi. Complete Service Documentation – The technician shall complete the service documentation, file paperwork for historical purposes, and update the Maintenance Log.

3. The Vendor shall be responsible for providing all tools and test equipment or any specialized tools required to perform the tasks of the maintenance agreement.

E. Emergency services shall be performed in response to specific events, and shall return equipment to an operating state following a malfunction. Emergency services shall include inspections and necessary tests to determine the causes of hardware and/or software malfunction or failure. The emergency services shall also include the furnishing and installation of components and/or parts that are required to repair malfunctioning system elements.

1. The Vendor shall perform emergency services in response to notifications by SP PLUS.
2. Due to the gravity of an equipment malfunction/failure, emergency responses and associated corrective actions shall be provided within the response times specified herein. When emergency services are required, as determined by SP PLUS, SP PLUS will notify the Vendor at any time, 24 hours per day, seven days per week, and 365 days per year. As with Preventive Maintenance, emergency services shall be tracked in the Maintenance Log. Vendor shall follow SP PLUS provided procedures on whom to contact to inform and/or update the status or resolution of a problem.

3. Only authorized SP PLUS staff may notify the Vendor to initiate Emergency Service notifications. The intent of this provision is to reduce or eliminate unnecessary service notifications and interventions onsite. SP PLUS shall provide to the Vendor a list of all individuals authorized to place emergency service notifications. This list shall be updated as required by SP PLUS. Vendor shall answer all notifications, but shall only respond to a notification for emergency service if the call was initiated by an authorized representative.

4. SP PLUS reserves the right to modify notification policies and procedures at any time throughout the life of the maintenance agreement.

4. All consumable office supplies shall be the responsibility of the Vendor.

F. BCAD Maintenance will serve as the first line of defense for the GTM System hardware. As such, BCAD Maintenance will respond to SP PLUS initiated service requests and attempt to resolve any equipment issues. The issue will be escalated to the Vendor as an emergency service request if BCAD Maintenance is unable to respond to the service request or unable to correct the hardware issue.

G. Performance criteria required during the warranty period shall be the same as those performance criteria detailed under Maintenance in Section 1.12.

H. GTM System software shall refer to the proprietary Vendor software used in the GTM System.

1. The Vendor shall make available to SP PLUS and/or the County normal GTM System software improvement releases (updates/fixes) when they become available or when delivered to other clients (whichever comes first). Where GTM System software problems are identified and are agreed to be minor, that is, not affecting revenue, reporting, or the tracking of commercial vehicles, these problems shall be corrected in a new GTM System Software release to be available to SP PLUS within 3 months of written notification. All upgrades or improvements to GTM System Software shall be documented and approved prior to implementation.
2. Priority 1 GTM System Software problems are defined as those causing erroneous financial transactions, revenue loss, reporting errors, loss of commercial vehicle tracking functionality, loss of dispatching functionality, loss of communications between the servers and field devices, GTM System instability, or database corruption. The Vendor shall address Priority 1 GTM System Software problems immediately on a priority basis not to exceed 4 hours. This obligation of the Vendor shall remain in force for a period of five (5) years.

3. GTM System software updates shall be provided free of charge during the warranty period and any optional warranty periods. However, SP PLUS shall have the option of implementing the updates. Seven calendar days prior to all GTM System software modifications, patches, updates, and upgrades, the Vendor shall provide accurate and complete documentation that describes:

   i. patch/update release designation
   ii. proposed date and time of implementation
   iii. detailed description of what the patch/update accomplishes
   iv. full back-out and restore procedures that return the System to its pre-patch update condition
   v. PCI and PA-DSS upgrades

4. Seven calendar days prior to installation of the GTM System Software modification, the Vendor shall provide a written evaluation of any GTM System Software modification’s impact on the GTM System.

5. The servers and workstations shall be delivered with the most recent service packs and GTM System software patches and shall be updated throughout the warranty period by the Vendor, unless otherwise specified by SP PLUS.

6. Automatic updates shall be enabled for all third party software applications for which auto-updates are available. The Vendor shall test all updates prior to updates being applied on the GTM System.

7. The Vendor shall provide all software and hardware upgrades necessary to maintain a PCI compliant environment for the GTM System for up to five (5) years at no charge.

8. If at any time the Vendor ceases to do business or ceases to make its GTM System software product commercially available, SP PLUS shall assume full ownership of the GTM System software. Thirty days prior to ceasing
to do business, the Vendor shall provide the most current version of the GTM System software source code to SP PLUS.

9. When a new version of the operating System becomes available, the GTM System shall have the ability to run on the new version in no more than 180 days of commercial release.

I. The Vendor shall make components available for 10 years after acceptance of the GTM System regardless of whether SP PLUS and/or the County enters into an extended maintenance agreement with the Vendor.

J. In the event that the Vendor intends to withdraw from the manufacture, distribution, or support of GTM Systems in the United States, discontinue a hardware component or refuse to extend the maintenance agreements, the Vendor shall provide SP PLUS and the County with notice thereof at least 180 calendar days in advance. In addition, the Vendor shall provide SP PLUS and the County with manufacturing specifications for all Vendor-manufactured components of the GTM System, and SP PLUS and the County shall be provided the opportunity to purchase a suitable amount of spares of all discontinued components.

K. The maintenance services provided by the Vendor shall include maintenance for the hardware and software used for the GTM System. The services proposed by the Vendor shall also cover any additional sub Systems that are installed by the Vendor as part of this project.

L. All maintenance service provided by the Vendor shall be in compliance with all applicable best practices required to establish and maintain a PA DSS compliant environment.

M. The support provided by the Vendor under the maintenance contract shall provide SP PLUS with complete GTM System support. The service coverage for hardware and software covered by the maintenance contract is 24 hours per day, seven days per week, and 365 days per year. SP PLUS and/or the County technicians and staff shall have access to Vendor-certified technicians to provide total System support. Access to a Vendor-certified technician includes contact by telephone, e-mail, and on-site as needed to provide the levels of support defined within the maintenance contract. The Vendor shall be responsible for providing all labor, materials, equipment, and supervision required to maintain and repair all GTM System hardware and software installed as part of this project, as well as GTM System hardware and software installed during the term of the maintenance contract. The scope of the maintenance work includes PM and emergency services maintenance.

N. SP PLUS and/or the County shall provide the following during the maintenance period:
1. An administrative office area and a spare equipment parts inventory room. Exact locations of administrative office area and spare parts inventory room to be identified by SP PLUS or BCAD after contract award. SP PLUS or BCAD shall provide the Vendor’s staff with cards or keys used to gain access in and out of the administrative office and the various parking facilities. Cards and keys shall be monitored by SP PLUS and/or the County staff and are not to be used at any time for personal travel. The Vendor shall be required to sign for receipt of cards, keys, equipment, and furniture included in the inventory.

2. Facility utilities for the administrative area, to include electricity, heating and cooling, shall be provided by BCAD.

3. Connections to the BCAD network as required.

O. The Vendor shall provide any personal computers and/or internet connections necessary to perform their maintenance duties. Vendor-provided computers may not utilize the BCAD network without approval from BCAD.

P. The Vendor shall be responsible for the following related to SP PLUS and/or BCAD provided facilities during the maintenance period:

1. Janitorial services and basic cleaning of all administrative areas.
2. Maintaining said areas in a professional and business-like manner at all times.
3. Telephone service, telephones and internet service.
4. Repairs or maintenance of the facilities due to negligence or willful abuse by the Vendor or Vendor’s representatives, as determined solely by SP PLUS and/or BCAD, shall be charged back to the Vendor. SP PLUS and/or BCAD shall have complete access to all SP PLUS and/or BCAD-owned facilities and assets 24 hours per day, seven days a week, and 365 days per year.
5. Physical modifications to all SP PLUS and/or BCAD-provided facilities require prior written approval by SP PLUS and/or BCAD.

Q. Any individual providing Maintenance Services as part of the maintenance agreement shall be a Vendor factory trained and certified technician.

R. Each month, within fifteen days following the end of the previous month, the Vendor and SP PLUS shall meet to review performance results of the prior month. Minutes of these meetings shall become part of the permanent contract file and shall be available to the Performance Bond Insurance Company throughout the warranty period, if requested. SP PLUS shall review the Vendor’s performance based on the standards outlined below for Preventive Maintenance
and Emergency Services Maintenance. The Vendor shall be required to submit a written report containing the reason for failure to meet the performance standards even if the failure is due to one of the allowed exceptions as stated below.

1. Preventive Maintenance

   i. The Vendor shall complete no less than 98% of all Preventive Maintenance scheduled during the month. Percentages shall be calculated on the total number of Preventive Maintenance tasks scheduled for just that month and the total number of Preventive Maintenance tasks fully completed in the month even if the scheduled maintenance is a monthly, quarterly, or annual maintenance requirement. Partial completion of a scheduled Preventive Maintenance item shall not meet this requirement and shall not meet SP PLUS’s standards of fully completed. Any month that falls below this level shall require a written justification from the Vendor and with measures implemented to assure SP PLUS staff that performance will improve.

   ii. Factors beyond the control of the Vendor, such as unexpected delays in parts, delays due to accidents or damage created at no fault of the Vendor, or severe weather (defined as unusual weather for the Fort Lauderdale area) shall be thoroughly documented in the Maintenance Log and reported to SP PLUS the next business day. SP PLUS retains the right to determine if the non-performance was beyond the Vendor’s control and is a valid reason for non-performance.

2. Emergency Service Maintenance

   i. The Vendor shall provide three methods of notification to be used for emergency contacts. The methods of notification shall provide a means of tracking the date and time the message was delivered. Examples of some documented communication include faxes, telephone calls and email. The Vendor shall respond within 30 minutes to all emergency maintenance notifications. Performance shall be calculated as the total number of response calls returned to SP PLUS within 30 minutes divided by the total emergency notifications placed in one month.

   ii. Emergencies shall be resolved within four hours after notification. A temporary solution is acceptable in the event replacement parts are not available in inventory. Performance shall be calculated as the total number of emergency events resolved within four hours divided by the total emergency notifications placed in one month.
iii. Factors beyond the control of the Vendor, such as unexpected delays in parts, delays due to accidents or damage created at no fault of the Vendor, or severe weather (defined as unusual weather for the Fort Lauderdale area) shall be thoroughly documented in the Maintenance Log and reported to SP PLUS the next business day. SP PLUS retains the right to determine if the non-performance was beyond the Vendor’s control and is a valid reason for non-performance.

3. SP PLUS shall cooperate with the Vendor to fully explore any concerns regarding service and performance standards. The following procedures shall be followed:

   i. SP PLUS shall notify the Vendor in writing of performance problems with respect to the service standards within 20 days after the end of each month based on the performance reports.

   ii. The Vendor shall be given 10 days from receipt of notification to take corrective actions with respect to the problem identified by SP PLUS or request relief, unless a different period of time is set forth in notice.

S. Maintenance Staff

   1. As part of the Proposal, the Proposer shall provide resumes for the proposed maintenance technicians and company principals who shall oversee and manage the maintenance staff.

   2. The Proposer shall propose an appropriately sized staff to ensure successful performance of routine Preventive Maintenance and Emergency Services Maintenance. The Vendor’s staffing plan shall take into consideration extenuating circumstances such as illness, family emergencies, vacations, etc. such that at all times the required number of technicians are available. Anticipated on-site hours and typical numbers of technicians on-site at any one time shall be provided in their Proposal.

T. Maintenance Log

   1. The Vendor shall utilize an SP PLUS-approved maintenance log to monitor and record all scheduled, requested, and performed maintenance services. The proposed maintenance log shall be included in the proposed Maintenance Plan.

   2. The Vendor shall fill in all required fields, completely, for all Preventive Maintenance and Emergency Maintenance Services scheduled and performed at the Airport.
3. The Vendor shall submit Monthly Maintenance Reports in SP PLUS-approved format to designated personnel during the Contract period. All reporting requirements shall be determined at the time of Contract start.

U. Spare Parts

1. The Proposer shall submit a list of manufacturer suggested spare parts (type and quantity) to be maintained on site. In addition, the Proposer shall submit a price list for the proposed spare parts inventory that lists the cost of the part, separately lists additional costs added for overhead and the total cost to SP PLUS for each proposed spare part. The Proposer shall guarantee spare component pricing from the time of equipment delivery, for two years. These prices shall be included in a separate price sheet from the Proposer’s Proposal. SP PLUS reserves the right to order and manage the GTM System spare parts inventory. The proposed spare parts list is subject to the approval of SP PLUS and/or Broward County, and SP PLUS and/or Broward County reserve the right to modify the spare parts inventory throughout the term of the Contract. SP PLUS and/or Broward County shall be responsible for providing the agreed upon inventory of spare parts to ensure continued operation of the GTM System. SP PLUS and/or Broward County shall provide a storage facility for the spare parts, to be identified by SP PLUS and/or Broward County after contract award. The Vendor shall have access to the spare parts inventory and shall have the responsibility of ordering replacement components or parts as components or parts are used as well as maintaining and organizing the inventory. As parts are replaced for maintenance or normal wear and tear, the Vendor shall order replacement spare parts for the inventory and send SP PLUS a monthly invoice therefore. However, any parts replaced (by SP Plus or the County due to an urgent incident) that are covered by warranty shall not be invoiced, but must be replenished by vendor to maintain inventory. All equipment and parts shall be newly manufactured within the past 6 months and never installed in an operational system other than for factory test purposes.

2. When delivered, an itemized list of manufacturers’ part numbers, model numbers, pricing, suppliers’ address, suppliers’ telephone numbers, and any single source components shall be identified by the Vendor and entered by the Vendor into the maintenance log. At all times, an accurate list of the spare parts inventory shall be maintained in the Maintenance Log by the Vendor. The spare parts inventory shall be available for audit by SP PLUS at any time. Any missing components identified during an audit shall be replaced by the Vendor within 3 business days at no cost to SP PLUS.

3. Based upon the maintenance experience, the Vendor shall recommend any changes in the spare parts inventory.
4. If critical to keeping the GTM System operational, Vendor shall supply loaner parts/components at no cost to SP Plus.

1.13 OPTIONAL WARRANTY AND MAINTENANCE

As part of its proposal, the Proposer shall provide warranty and PM costs for years three through seven following the expiration of the mandatory two year warranty period. Warranty and PM under an extended agreement shall be provided by the Vendor or a Vendor-certified third party maintenance provider. A list of certified maintenance providers shall be submitted with the Proposal. It shall be at the sole discretion of SP PLUS whether or not to select the Vendor or a third party maintenance provider after the original warranty period. Should SP PLUS choose to select maintenance provider that is not a certified maintenance provider for the GTM System equipment, that maintenance provider shall be required to be factory trained and certified to maintain the GTM System. The Vendor shall factory train and certify any SP PLUS and/or County staff or third party staffs that SP PLUS desires to perform the maintenance on the GTM System. The cost per staff member to become factory trained and certified by the Vendor shall be included in the Proposal as a separately priced item.

1.14 ELECTRONIC FILES

All GTM System electronic files created, stored and transmitted on SP PLUS and/or County systems become the intellectual property of County.
PART 2  GTM SYSTEM REQUIREMENTS

2.1  GTM SYSTEM HARDWARE

A.  General Requirements

1.  All equipment and associated materials utilized in the GTM System shall be newly manufactured. No used or refurbished equipment and associated materials shall be utilized.

2.  All equipment performing a like function and of the same part number shall be fully interchangeable without the requirement for physical modifications (other than setting of dip switches to designate a specific function selection).

3.  Vendor shall provide equipment that supports TCP/IP and remote monitoring of distributed units. SNMP shall be utilized for all equipment with Ethernet connections, i.e., servers, workstations, networking equipment, AVI readers, UPS units, etc.

4.  Each field device shall be assigned a unique identifier within the GTM System that is not shared with any other field device. Should the field device need to be replaced, the replacement field device would assume the old device’s unique identifier. Vendor shall submit a naming convention for the field devices subject to approval by SP PLUS.

B.  Computer Servers

1.  Application Server Requirements

   i.  Vendor shall design and implement a dual, redundant application server solution that provides high availability and an independent data storage device. All operational functions shall continue without data loss upon failure of any single memory or associated interface. The preferred manufacturer is Dell.

   ii. Each application servers shall operate the entire GTM System in the case of the other application server failing, and shall utilize an active/passive scheme with automatic failover such that no server-level single point of failure shall cause disruption to the GTM System.

   iii. Application servers shall operate using the latest edition of Microsoft Windows Server Enterprise available at the time of deployment.

   iv. Operating System program software and firmware shall be furnished fully installed on the servers with all required system
software licenses registered to SP PLUS. The servers shall exclude any hardware that would preclude the purchase of standard maintenance and service contracts from the manufacturer, dealer or vendor.

v. Operating System shall support TCP/IP network protocol.

vi. Application servers shall incorporate built-in diagnostics implemented in the software/firmware, hardware, or both. Each time the application servers are started or re-booted, they shall automatically execute a series of built-in tests and report equipment malfunctions, configuration errors, and inaccuracies. An alarm shall be announced if the application servers fail the built-in diagnostics and each failure or exception shall be stored in a system maintenance log. The built in diagnostics shall be capable of informing of fault conditions via pager and/or email notification.

vii. Application servers shall have clocks/calendars that receive time from an SP PLUS approved time source.

viii. The application servers shall include the central processing unit, hardware and functions as follows:

a. Mirrored dual hard drives utilizing RAID 5 technology, dual processors, and dual power supplies.

b. Processors shall be the fastest available at the time of deployment and shall have at least a 64 bit operating System. The preferred manufacturer is Intel.

c. 16 Gigabyte RAM, minimum.

d. 22” viewable LCD flat screen monitors, 1920 x 1200 resolution or greater.

2. Database Server Requirements

i. Vendor shall design and implement a database server solution that meets industry standards for high availability with failover capability such that all server functions shall continue without data loss upon failure of any single server component.

ii. Database shall utilize Microsoft SQL.

iii. Maintain two (2) years of on-line data of all associated GTM System transactional data. This data shall be readily accessible on
the real-time server database, and accessible without any delay in processing.

iv. Maintain five (5) years of archive data of all associated GTM System transactional data in a secondary database. Access to this information may be infrequent such that the data can be stored on an off-line database. When the information is queried the real-time system should automatically search the off-line database for the records requested.

v. Database sizing shall include support for 300% increase in the number of transactions for the GTM System. The Vendor shall identify any limits on system hardware or software expansion that, if exceeded, would require the replacement or significant reconfiguration of database components.

vi. Vendor shall provide documentation outlining database backup and database redundancy as part of their Proposal.

3. Archive Database Server Requirements

i. Vendor shall provide an archive database server and a mechanism whereby all information and reports can be archived from the RAID 5 database server onto a separate database. All data shall be stored on the archive database server such that all historical data can be retrieved, queried, or printed from any GTM System workstation. Vendor shall provide the archive database server and all necessary tools for archiving data. The archive database server shall be expandable such that all GTM System data collected over the life of the system can reside on the archive database server.

ii. Vendor shall provide documentation outlining archive database backup and archive database redundancy as part of its Proposal.

4. Computer Servers Location

i. Computer servers shall be located in a BCAD-selected communications room in the Cypress Garage or in a Terminal building. Vendor shall take into consideration the distance from communications rooms to the field equipment when selecting the type of communications cabling to be used. The servers must be secured in a rack and meet PCI and PA-DSS compliance standards.

ii. Proposer’s shall examine the selected communications room and include in its Proposals any necessary room modifications with respect to HVAC, fire suppression, or power requirements.

C. Desktop Workstations
1. Vendor shall provide five (5) GTM System desktop workstations. Workstations shall be PC-based and shall include the following:
   i. Processor shall be the fastest available for a standard desktop computer at the time of deployment
   ii. 8 Gigabyte RAM, minimum
   iii. 500 Gigabyte hard drive, minimum
   iv. 22” viewable LCD flat panel monitor, 1920 x 1200 resolution or greater
   v. Dell computers preferred

2. The disk operating system program software and firmware shall be Microsoft Windows™ (current version being used by SP PLUS at the time of deployment) and shall be furnished fully installed on the workstations with all software licenses registered to SP PLUS. The workstations shall exclude any hardware that shall preclude the purchase of a standard maintenance and service contract from the computer manufacturer, dealer or Vendor.

3. The Vendor shall provide virus protection software on all workstations that is capable of detecting, removing, and protecting against all types of malicious software. Antivirus software must be capable of providing real-time protection and have the capability for automatic updates.

4. All workstations shall have sufficient memory and speed to operate the GTM System and other typical desktop workstation software. For example, the workstations shall be able to run Microsoft Office, internet browsers, Email programs, etc., in addition to the GTM System.

5. Any workstation shall be able to access any module of the GTM System based on access rights of the user.

D. AVI Antennas
   1. Shall be mounted in a center-fire position above each read zone.
   2. Shall be fully operable when mounted at heights sufficient to provide minimum required clearance for commercial vehicles.
   3. Shall be encased in weatherproof enclosures, capable of withstanding 100% humidity condensing.
   4. Shall be fully operable in any temperature and/or humidity range occurring naturally at the Airport.
E. AVI Readers

1. The GTM System Readers shall provide the following features and functions:

   i. Read vehicles equipped with SunPass™ compatible transponders through commercial vehicle entry lanes and exit lanes, and throughout the Terminal roadway system.

   ii. Properly function and track vehicles with one or more tagged vehicles passing near the reader simultaneously.

   iii. Read and accurately identify no less than 99.9% of properly mounted tags that pass through the read zone for each antenna.

   iv. Properly function and track commercial vehicles travelling up 65 mph on the Terminal roadway system.

   v. Properly function and track commercial vehicles travelling up to 30 mph at the entry points to the GTAs and Holding Lot.

   vi. Continually upload data to the system servers in an online, real-time basis as soon as the system completes the decoding process for the tag.

   vii. Processes tag reads at multiple locations to create a completed transaction. Incomplete tag reads, i.e., unmatched read transactions, shall be buffered in the system and remain unprocessed until the host computer receives the matching transactions.

   viii. Ethernet and RS-232 communication interface.

   ix. Buffer a minimum of 10,000 transactions or a minimum of 60 days, whichever is less, if there is a failure in communication with the System server.

   x. Upon restoration of communications with the in-lane controller, the reader system shall automatically transmit previously un-transmitted, buffered data to the System server.

   xi. Fully operable in any temperature and/or humidity range occurring naturally at the Airport.

   xii. Ensure that any weather impact on radio frequency (RF) signal strength is mitigated in the design and installation.
xiii. Designed to use the 915 MHz bandwidth for RFID as designated by the Federal Communication Commission (FCC). Systems employing 2.45 GHz, 5.8 GHz, and 5.9 GHz frequencies are not acceptable.

2. AVI Transponders

i. The AVI readers and antennas shall read AVI transponders issued by SunPass™ or other SunPass™ compatible AVI transponders issued by SP PLUS or other authorized issuing agency.

ii. Vendor shall recommend the types of transponders to be used for each vehicle type based on the AVI reader manufacturer’s requirements.

iii. Vendor shall provide all necessary procedures for testing and provide an additional 500 AVI transponders to SP PLUS prior to the start of the SAT.

3. Reader and Antenna Housings

i. All reader components shall be housed in waterproof, rodent-proof, and vandal-proof harsh environment NEMA 4X enclosures and shall be fully operable in any temperature and humidity range occurring naturally at the Airport. The Vendor shall provide any and all external heating and/or cooling devices necessary to achieve the required operability.

ii. Externally mounted antennas shall be housed in a highly durable, UV- and corrosion-resistant case.

F. Uninterruptible Power Supply (UPS) Units

1. Conditioned/emergency power through TCP/IP-enabled UPS units shall be provided for the following components to protect against loss of power, lightning strikes, power surges, and brownouts:

i. Application and data servers

ii. AVI readers

iii. Barrier gates, if applicable.

2. UPS units requirements:

i. 30 minute minimum run-time for all locations

ii. Automatic voltage regulation
iii. Ethernet interface  
iv. Supports SNMP monitoring  
v. Programmable dry contacts  
vi. Hot-swappable batteries  
vii. Event and alarm logging with time and date stamping  
viii. Wall, pole, or pedestal mountable

3. The UPS units shall be sized with 50% spare capacity. This shall facilitate 30% expanded load with an 80% continuous load factor.

4. An on-line, solid state UPS units shall provide both backup power and transient surge protection as defined as necessary by the CBEMA. The Vendor is alerted to the fact that there are a number of power distribution panels providing electrical service Airport wide. The Vendor shall be responsible for providing the UPS backup requirements for each of the locations where UPS backup is required, based upon the equipment that is actually being supplied by the Vendor. SP PLUS shall review and approve the UPS units to be provided by the Vendor.

5. A single UPS unit, appropriately sized, shall support all devices at an individual read zone. UPS units that supply conditioned and back-up power to multiple components are required to minimize maintenance.

6. All UPS units shall allow automated notification via Ethernet interface to the central servers when battery power is activated or the battery levels become critically low. On-line communication using an appropriate UPS monitoring software application shall be provided on one or more workstations with user selectable options to view the status of each individual installed UPS unit. At a minimum, the monitoring software shall display the operational status of each UPS unit (line/battery, online/offline) and generate alarms in the event the UPS unit’s battery power is engaged, becomes critically low, and when it is completely exhausted.

7. As part of its Proposal, the Proposer shall submit shop drawings of all proposed UPS units. Included in the UPS shop drawings shall be the manufacturer’s recommended battery refresh cycle that will need to be performed during the initial and extended warranty periods.
G. Wireless Handheld AVI Readers

1. The wireless handheld AVI readers shall read all AVI transponders issued by SunPass™ or other SunPass™ compatible AVI transponders issued by SP PLUS or other authorized issuing agency.

2. As part of its Proposal, Proposer shall submit shop drawings of all proposed wireless handheld AVI readers.

3. Initially, there will be a requirement for seven (7) handheld AVI readers.

4. Wireless handheld AVI readers shall perform the functions set forth in Sections 2.5, 2.6 and 2.7.A.ii.

5. All wireless handheld readers shall communicate in real time.

H. Barrier Gates

1. All barrier gates shall have:
   
   i. Direct drive mechanism
   
   ii. Padded gate arm
   
   iii. Electronically controlled rebound feature
   
   iv. Non-resettable, mechanical gate action counter visibly mounted on the barrier gate housing
   
   v. Gate arm length sufficient to span entire lane, or multiple barriers where appropriate
   
   vi. Single piece or articulated gate as required by height limitations

2. Barrier gates shall have enough power/resistance to ensure they cannot manually be forced open.

3. Barrier gates shall rise to the open position in the event there is a power failure and the UPS is no longer able to provide sufficient power to operate the gate.

4. As part of its Proposal, the Proposer shall submit shop drawings of all proposed barrier gates.

I. Vehicle Detection Devices

1. Saw cut or embedded loops shall be used for vehicle detection. Alternate detection devices must be approved by SP PLUS.
2. The loop detectors shall be dual channel detectors. The detectors shall detect the presence or transit of a vehicle over an embedded loop of wire.

3. The loop detectors shall provide two channel pulse and presence outputs.

4. The loop detectors shall provide separate, momentary contact closures upon detection of a vehicle, along with continuous contact closures during the period that the vehicle is detected.

5. The loop detectors shall contain two fully separate, self-tuning, vehicle loop detectors and directional logic circuitry.

6. The loop detectors shall incorporate a sensitive Tailgate Recognition System capable of resolving two automobiles within six inches of each other on a standard 2.5 ft W x 6 ft D loop.

7. The loop detectors shall operate in three separate sensitivity modes: high, medium and low.

8. Different sensitivity settings shall allow vehicles of varying heights and sizes to be properly detected.

9. The loop detectors shall be fully microprocessor-based.

10. Each loop detector shall continuously retune itself to its loop frequency during non-detect periods to prevent the detector from generating a false detect output due to frequency variances caused by environmental effects or other factors. Analog type detectors requiring periodic manual tuning or any type of detectors that do not retune unless a manual function is performed shall be unacceptable.

11. The loop detectors shall generate two loop frequencies. No two frequencies shall be the same. This shall minimize the possibility of detector crosstalk or interference between two detector loops mounted within close proximity. Detectors generating an identical frequency shall be unacceptable.

12. Loop wire shall be either #16 AWG THHN or TFFN stranded wire.

J. Outdoor Dynamic Displays (Option)

1. The Vendor shall provide outdoor dynamic display(s), Daktronics Galaxy AF-3500-RGB-SF, or equal.

2. Outdoor dynamic displays shall be utilized to broadcast automated dispatch information in the Holding Lot or other designated location(s).
3. Quantity of displays and display matrix sizes shall be recommended by the Vendor.

4. At a minimum the outdoor dynamic display(s) shall:
   
i. Display the alpha numeric designators of the first 10 vehicles of designated types in a queue with a minimum character height of 6 inches. The next vehicles to be dispatched shall be located at the top of the list in order of time of arrival.

   ii. Display the alpha numeric designators of taxicabs that are actively being dispatched along with the GTA to which they are being dispatched in a different color, flashing and be displayed with a minimum character height of 8 inches.

   iii. Display the alpha numeric designator of special request taxicabs that are actively being dispatched along with the GTA to which they are being dispatched in a unique color, flashing and be displayed with a minimum character height of 8 inches.

5. Vendor shall provide display control software and integration with GTM System software such that the outdoor dynamic displays operate fully automated and display outputs sent from the GTM System dispatch module.

6. As part of its Proposal Proposer shall submit shop drawings of the proposed outdoor dynamic display(s).

2.2 COMMUNICATIONS

A. General Requirements

1. Vendor shall be responsible for the installation/connection of all communication devices to the electrical and communication infrastructure identified in the Construction Documents. Communications from the reader locations to the central servers can be wireless, hardwired, or a combination thereof to provide the most cost effective solution.

2. GTM System will be allowed to transfer data over the BCAD network via a private VLAN, if necessary. BCAD will provide the private VLAN on the BCAD network for the GTM System.

3. Proposer shall submit a detailed description of its proposed communication plan for BCAD and SP PLUS review.

4. All field component communications shall utilize a point-to-point configuration.
5. As part of the communication the County requires Serial Ethernet Convertors Lantronix UDS1100 /UDS1100-PoE.

B. Wireless Communication

1. Prior to installing any wireless access points, the Vendor shall conduct a wireless site survey, including a spectrum analysis, to evaluate the behavior of radio waves within the Airport’s roadway System. Vendor shall use the information obtained during the wireless site survey to determine the number and location of wireless access points and controllers. Vendor shall submit the parameters and methodology for the wireless survey to SP PLUS and the County. The wireless survey shall not be conducted until the methodology is approved by SP PLUS and the County.

2. All wireless access points installed for the GTM System must support both 2.4 GHz and 5 GHz bands.

3. Wireless networks for the GTM System must be fully secured and encrypted and components must operate on the 5 GHz band and shall adhere to the IEEE 802.11a standard with the exception of the handheld devices which shall operate on the 2.4 GHz utilizing the IEEE 802.11 b/g standards.

2.3 ELECTRICAL

A. All electrical work must comply with the requirements of all national, state, and local codes and standards applicable to that work.

B. Final equipment locations shall be determined during the Vendor’s design process and approved by SP PLUS.

2.4 MOUNTING STRUCTURES

Mounting brackets for the Base System shall be provided for new and existing structures where readers and/or antennas are mounted.

2.5 SOFTWARE – BASE SYSTEM

A. General Requirements

1. The GTM System software shall be a browser-based software solution capable of receiving, identifying, counting, storing, and processing commercial vehicle data (such as trips, dwell time, number of vehicles an operator has on the roadway system, etc.) in real-time based on AVI reads obtained at the various read locations. The base GTM System will be used to track and monitor vehicles as they enter and exit the Airport roadway system.
2. The base GTM System shall be used to control vehicle access to the Second Level Busway. Access to the Upper Level roadway bus entrance will be gate controlled.

3. All user interaction within the GTM System shall be Windows-based Graphical User Interfaces (GUI).

4. The GTM System shall provide monitoring of vehicle activity through a System of real-time GUI displays of ongoing user activity and alarms for defined events.

5. The GTM System shall provide real-time monitoring of GTM System hardware and alarms for defined events such as loss of communication to a particular device.

6. Any authorized workstation connected to the BCAD network or another BCAD-approved network shall provide access to the browser-based GTM System. This includes access by other County agencies that may be responsible for the issuance of transponders. Access must have a secure firewall connection using Check Point. Firewall connections to the County and/or SP PLUS shall be under the control of the BCAD Information Systems department.

7. GTM System software shall utilize contemporary user authentication methods including unique user identification, passwords complexity requirements, periodic forced password changes, unsuccessful logon handling, and configurable access permission controls by user group.

8. Software shall allow for the use of the handheld readers used for curbside identification of vehicles.

9. Software shall provide unlimited expansion capability of items such as read zones, number of readers, number of accounts, number of tags, messaging signs, barrier gates, etc. Vendor shall certify that expansion of reader locations can be accomplished through the addition of field hardware and support communications only. Vendor shall identify any limits on system software expansion that, if exceeded, would require the replacement or significant reconfiguration of software.

B. Commercial Vehicle Accounts

1. Each permitted commercial vehicle shall either be issued a transponder by SP PLUS and/or other designated agency or register its existing SunPass™ transponder for use in the GTM System.

2. Vehicle class shall determine the type and amount of fees to be charged. Vendor shall provide a minimum of 20 predefined vehicle classes. SP
PLUS will provide Vendor with the vehicle class name and rate structure for each class.

3. The GTM System software shall provide an interface by which SP PLUS can create and edit commercial vehicle accounts. Information to be stored for each commercial vehicle account shall include the following, at a minimum:
   i. Transponder number
   ii. Vehicle ID number
   iii. Vehicle description
   iv. Vehicle Class
   v. License plate number
   vi. Dispatch company name and contact information
   vii. Operators’ names, hack numbers and contact information
   viii. Insurance information, including expiration date
   ix. County or SP PLUS-issued permit information, including expiration date
   x. Payment information
   xi. Transponder or permit deposit information
   xii. Associated fee structure(s) and amounts for the account (trip, dwell, fixed fees, etc.)

4. The software shall allow SP PLUS to search the system to find information on individual vehicles or vehicles by company. Queries shall be run using one of several user-selectable fields including vehicle ID, transponder number, operator name, company name, hack number or any other database field.

5. The software shall allow individual vehicles or a group of vehicles to be placed on a watch list such that those vehicles are identified when they enter the Holding Lot or Airport roadway system. When placing a vehicle on the watch list there shall be a field for the description of the reason the vehicle is on the watch list. The description shall be selectable from a drop down list of predefined reasons or can be user defined.

C. Alarms
1. Alarms shall be user configurable, so long as the user has appropriate access rights, such that an authorized user can turn certain alarms on or off, set the priority level for each alarm type, and assign audible alarms.

2. The GTM System shall provide alarms on a desktop workstation and/or handheld workstation that remain active until acknowledged.

3. Alarms shall be sent using SNMP v2 or v3.

4. The System shall provide for the following alarms, at a minimum:
   i. Excessive vehicle dwell time, “Hot Listed vehicles”, suspended vehicles or suspended operators
   ii. Vehicle that bypasses Holding Lot
   iii. Vehicle that bypasses assigned GTA
   iv. Vehicle with expired insurance
   v. Vehicle with expired permit
   vi. Vehicle with invalid transponder
   vii. Vehicle on watch list
   viii. Loss of communication to GTM System hardware
   ix. Software or hardware failures

D. User Configurable Settings

The software shall allow users with appropriate authorization to make changes to the system.

E. Trip Fee Assessment

The point at which a vehicle is assessed a Trip Fee shall be configurable such that SP PLUS can determine when a vehicle is charged a Trip Fee.

F. Billing

1. The GTM System shall support multiple billing methods.

2. The GTM System must have the ability to bill through PROPworks® accounting system. The GTM System shall provide automatic export of activity information to PROPworks® to facilitate billing and provide for the import of non-payment information from PROPworks® to facilitate the suspension of overdue accounts. Proposer shall coordinate with Air
Transportation Services, Inc. (AirIT) to integrate the GTM System with PROPworks and include in its Proposal all costs associated with integration. These costs should include any costs incurred by AirIT to provide integration support.

3 SP PLUS shall utilize the GTM System to issue invoices and process payments. The GTM System to include a PA DSS compliant software module capable of generating invoices and/or processing payments using a credit card on file or other SP PLUS approved payment method. Payment options shall include payments by dispatch companies and/or individual vehicles, and utilizing debit-based payments. In addition to Trip Fees, the system shall be capable of charging and recording various other fees and charges, including but not limited to registration fees, security deposits, late payment charges, etc.

G. Reporting

1. The GTM System shall provide a set of standard reports as well as be capable of generating custom reports. Proposer shall include in its Proposal a set of sample reports. Sample reports shall include a functional description of each report and a screen shot of each report layout with sample data populating each field in the report.

2. Standard reports shall include activity reports that record trips, dwell times, and fees. The reporting package shall allow SP PLUS to run queries based on individual accounts, multiple accounts for a single company, or class of vehicle. Timeframes for the reports shall be user-selectable based on predefined timeframes (hourly within a selected day, day, week, month, year, etc.) or based on a user-defined time period. Standard activity reports that shall include at a minimum:

   i. Trips by Vehicle – Summary reports showing total number of trips and associated revenue for the selected timeframe as well as detailed reports showing individual transaction details for the selected timeframe.

   ii. Trips by Company – Summary and detailed reports with a breakout of each vehicle for the respective company.

   iii. Trips by Vehicle Class – Summary reports of trips for each class with a breakout of each company’s trips within the selected timeframe.

   iv. Dwell Time - for all accounts or selectable by vehicle or company for selected timeframe.

   v. Excessive Dwell Time – for all vehicle or selectable by vehicle or company for selected timeframe.
vi. Comparative Activity – High level reports showing activity by company or vehicle class for selected timeframes to evaluate commercial vehicle activity and trends.

3. Standard reports shall include administrative record that report account information for individual vehicles, information for groups of accounts (by class or company), transponder tracking, violations, actions taken by System users, and System error logs. Timeframes for the reports shall be user-selectable based on predefined timeframes. Examples of standard administrative reports include:

i. Transponders – Reports that show transponders issued to an individual or company, transponders returned by an individual or company.

ii. Invoicing and Billing - Reports showing current invoices and billing history by individual account or by groups of accounts.

iii. Violations – Reports showing violations for individual vehicles or groups of vehicles for violations such as; bypassing the assigned GTA or Holding Lot,

iv. System User– Audit reports showing actions taken by users including the modification of fee structures and dwell time configurations. Audit reports should also include reports for activity related to the import/export of data between the GTM System and third party systems.

v. Errors – Reports displaying System and hardware errors for the selected timeframe.

4. In addition to the standard reports, the GTM System shall allow SP PLUS to select user-defined database fields and timeframes to create user-defined activity and administrative reports. The System shall save the format of the custom created reports for use at a later date. Proposer shall include in its Proposal a description of its methodology for providing this user-defined reporting functionality.

5. All reports shall be printable and exportable to Word, Excel, and PDF, as appropriate.

H. Second Level Busway Access Control

1. The GTM System shall have the ability to control access to the Upper Level roadway bus entrance at the northeast corner of the Cypress Garage. Installation shall include intercom and CCTV with remote monitoring capability.
2. Accounts shall be configurable such that they are allowed or denied access to the bus entrance.

3. The GTM System shall be integrated with the barrier gate(s) at the Second Level Busway such that the system reads the transponder of the vehicle attempting to enter the area and vends the barrier gate if the account has authorized access. The system shall deny entry to unauthorized vehicles.

2.6 SOFTWARE INTEGRATION OF HANDHELD READERS

Handheld units shall read transponders and display current vehicle information including:

A. Transponder number
B. Account standing
C. Vehicle ID number
D. Vehicle description
E. Vehicle class
F. License plate number
G. Company name
H. Insurance information, including expiration
I. SP PLUS issued permit information, including expiration

2.7 SOFTWARE – DISPATCH MODULE OPTION

A. General Requirements

1. In addition to the base GTM System described above, SP PLUS may elect to dispatch commercial vehicles and monitor and control staging at the Holding Lot, various GTAs or other designated locations using the GTM System. Vendor shall provide a separately priced option for this dispatch module.

2. All commercial vehicles dispatching activity shall be displayed in real time on workstations and handheld readers.

3. It is anticipated that the existing Holding Lot will be relocated. Proposer shall identify any limits and pricing impact on system software that would require the replacement or significant reconfiguration due to the relocation of the Holding Lot.
4. It is anticipated that the access to the GTAs will be free flow at the read locations but gate control may be utilized at a later date. Proposer shall identify any limits and pricing impact that would require the replacement or significant reconfiguration of software due to gate controlling the GTAs or other reader locations.

5. The GTM System software shall be capable of staging and dispatching vehicles from multiple (up to three) hold lots.

B. Holding Lot

1. The Holding Lot currently is used for taxicabs, on-demand shared ride vehicles and charter bus vehicles. The GTM System shall be capable of detecting, identifying, registering and sequencing vehicles in the Holding Lot based upon vehicle classifications. The system shall continually, in real-time alert next-in-line taxicabs that are sequenced to move to the appropriate GTA by means of an LED outdoor display system. A minimum of the next 10 taxicabs in the queue shall be displayed on the displays. See Section 2.1.J for outdoor dynamic display requirements.

2. The GTM System shall be integrated with the barrier gate at the Holding Lot such that the System reads the transponder of the vehicle entering the Holding Lot and vends the barrier gate if the vehicle is in good standing. The system shall deny entry to a vehicle if its account is on the Watch List, the vehicle’s insurance is expired, the vehicle has unpaid invoices, or the vehicle’s credit card on file is invalid, etc.

3. Once a vehicle has entered the Holding Lot, the vehicle shall be placed in the appropriate queue for dispatching.

4. If a vehicle is dispatched and does not leave the Holding Lot within a user selectable timeframe it shall be placed at the bottom of the queue.

5. During times of peak demand it may be necessary for vehicles to bypass the Holding Lot and proceed directly to the GTAs. The system shall have a Holding Lot bypass function that, when activated, allows vehicles to bypass the Holding Lot and proceed directly to the GTAs.

C. Dispatching

1. Once a vehicle is dispatched, the appropriate displays and devices shall be updated. As vehicles leave the Holding Lot or other designated staging areas they shall be removed from the displays. As the vehicles arrive at their assigned GTAs, the handheld computer shall be updated to display the vehicles that have entered the GTAs.

2. Should a vehicle enter the wrong GTA or enter a GTA without being dispatched from the Holding Lot or other designated staging areas, an
alarm shall populate the workstations and an alarm shall be visible on the handheld readers.

3. The system shall record reassignment of a vehicle from one GTA to another GTA.

D. Trip Fee Assessment Point

The point at which a vehicle is assessed a Trip Fee shall be configurable.

2.8 CUSTOMER WEB INTERFACE OPTION

General Requirements

A. As a separately priced optional component of the GTM System, Proposer shall provide a secure web interface for commercial vehicle dispatch companies to view and manage their accounts.

B. Web interface shall allow customers to update payment (credit card) information and pay invoices.

C. Web interface shall not allow direct access inside network servers.
PART 3 EXECUTION

3.1 VERIFICATION OF SITE CONDITIONS

A. The Vendor shall verify all existing site conditions prior to implementation. In the event that site conditions are different from the conditions existing at RFP site visit, the Vendor shall notify SP PLUS in writing of the exact differences, and shall inform SP PLUS in writing of any implications the difference has on the project.

B. The Vendor shall verify that the installation location is prepared and ready to commence installation. The Vendor shall notify SP PLUS, in writing, if the Vendor finds that the installation location is not prepared for installation due to unfinished work outside of the Vendor’s scope of work. The written notification shall provide detail of the elements that are in need of modification in order to prepare the location for equipment installation.

3.2 INSTALLATION

A. General Requirements

The Vendor shall submit an Installation Plan to SP PLUS for approval 30 days prior to System installation that includes the construction schedule, time of day when work will take place for each task, MOT plans, and detailed installation procedures.

B. Second Level Busway Loop Installation Requirements

1. Loop installation must be in accordance with all loop manufacturer recommendations unless those recommendations conflict with those listed in this section.

2. Saw cuts for detection loops at the bus entrance on the Upper Level Roadway at the northeast corner of the Cypress Garage must not exceed a depth of one and one half inches (1½”).

3. Vendor shall locate rebar contained in the concrete roadway in the vicinity of the loop locations prior to determining the final location for the loops. For optimum loop performance, loops shall be positioned such that loop wires are placed at right angles (NOT parallel) relative to the rebar below.

3.3 TESTING

A. Site Acceptance Test (SAT)

1. The SAT shall be conducted by the Vendor as a demonstration to SP PLUS that the installed equipment complies with these Specifications.
2. After completion of the IPR process and approval of the Installation Plan, the equipment, software, and subsystems may be installed at the Airport. When system installation has been completed, the Vendor shall conduct its internal testing of the installed equipment. Internal testing shall follow the SAT test procedures. Upon successful completion of the Vendor’s test, the Vendor and SP PLUS shall perform the SAT to verify performance. The SAT shall only be performed by SP PLUS after a fully completed and signed test script verifying successful completion of the Vendor’s internal testing is submitted. Signed internal test scripts shall be submitted at least one calendar day prior to the scheduled test with SP PLUS.

3. If an option is implemented, an additional SAT shall be required. SAT shall be conducted at the Airport for the GTM System for each phase of the project. One SAT shall take place after the base System installation and SATs shall take place for any subsequent phases that SP PLUS elects to implement.

4. The Vendor shall not activate the GTM System until the SAT has been successfully completed and SP PLUS has notified the Vendor to implement the GTM System.

5. The Vendor shall provide SP PLUS test procedure documents for the SAT in accordance with the submittal guidelines, including:

   i. narrative describing the general procedures to be followed;

   ii. definition of all minor and major deviation types;

   iii. checklist of all items necessary to conduct the test (e.g. transponders, equipment keys, etc.);

   iv. checklist for the components of each reader/antenna or device;

   v. signature page for all SAT participants’ signatures;

   vi. step by step instructions for testing each functionality;

   vii. tests for verifying the reporting requirements;

   viii. area within each test section to denote “pass” or “fail”; and

   ix. section for listing and describing test deviations.

6. The Vendor shall provide all ancillary equipment and other items necessary to complete the SAT and make available sufficient personnel to perform the SAT in an efficient and timely manner.
7. The SAT shall be considered successfully completed when all components have passed their respective test procedures and all test documents have been signed by SP PLUS and Vendor. Minor deviations resulting in the creation of punch list items shall not be considered grounds for failure of the overall SAT. Major deviations found during the SAT shall result in a failure and requisite retest. The Vendor shall credit SP PLUS from its total contract price for any travel and/or labor costs incurred by SP PLUS as a result of retesting a failed SAT.

B. Operational Demonstration Test

1. The ODT shall be comprised of all equipment, systems, and subsystems performing under actual conditions, e.g., patron use, normal activity recording, and reporting procedures. This ODT shall demonstrate, over a period of 30 consecutive calendar days, the successful performance of all aspects of the GTM System. SP PLUS reserves the right to be present for all maintenance services during the 30-day ODT.

2. For purposes of the ODT, a subsystem is defined to be any one of the following:

   i. Application Servers
   
   ii. Data Servers
   
   iii. Credit card authorization System (if applicable)
   
   iv. Data communication System
   
   v. GTM System workstations
   
   vi. Individual reader locations

3. The ODT shall begin after successful completion of the SAT at a time designated by SP PLUS

4. The Proposer shall submit an ODT procedures document its Proposal. ODT procedures documents are intended to outline procedures for monitoring the overall performance of the GTM System and shall not include test procedures for individual lanes or components. The ODT procedures document shall include:

   i. Narrative describing the general procedures to be followed;
   
   ii. Methodology for calculation of downtime for the various GTM System components; and
iii. Electronic tracking document to be used during the ODT period for documenting failures and downtime.

5. The ODT shall continue for 30 consecutive 24-hour periods during which all the performance criteria, stated below, shall have been met. If during the 30 day period the System fails to meet any one of the following specified performance criteria, the ODT shall begin anew on a day agreed upon by SP PLUS and the Vendor. The Vendor shall agree to credit SP PLUS from its total contract value for any travel and/or labor costs incurred by SP PLUS as a result of retesting the System.

6. The performance criteria for successful completion of the ODT shall include:

i. No individual subsystem shall be operationally unavailable for four or more hours cumulative during the 30 day test period.

ii. No individual subsystem shall be operationally unavailable for more than two consecutive hours.

iii. If any single component fails more than once during the 30 day period for the same reason, it shall be replaced upon the second failure with a newly manufactured component of the same type and the test shall continue.

iv. No component of a given type (e.g., reader, antenna, UPS, etc.) shall fail more than three times during the 30 day test period for the same reason; otherwise, all components of that type shall be replaced to correct the common deficiency upon the fourth failure and the test restarted from the beginning.

7. In addition to the GTM System reports generated during the ODT, the Vendor shall provide a one page summary report that clearly provides the overall percentage of system downtime and causes of that down time.

8. The Vendor shall provide a corrective action report that provides a detailed description of each failure, the type of failure, why the failure occurred and the remedy therefore.

9. All reports shall be 100% accurate and reconciled against one another over the 30 day testing period, otherwise, the test shall be deemed a failure, problems shall be corrected and the ODT restarted from the beginning.

10. A subsystem shall be considered unavailable as long as any major component of the subsystem is not functioning. As an example, the major components of a lane include but are not limited to:

i. AVI reader
ii. AVI antenna

iii. UPS

iv. Data communication

v. Power supply

11. An inoperative subsystem shall not be deemed unavailable if it has become inoperative because of:

i. Outage of line power beyond required duration of UPS power backup;

ii. Malicious damage or vandalism to a component(s) by employees, patrons or others; however, if any undamaged subsystem component should fail in the interim, unavailable time shall accrue;

iii. Network connectivity issues beyond the Vendor installed communications components

iv. GTM System failures due to SP PLUS provided equipment issues and/or failures

v. Failures caused by a 3rd party; or

vi. Natural disaster

12. Should a failure occur in the System that is caused by normal hardware failure, it shall be repaired and the test resumed with downtime accrued. Where the failure causes inadequate test data to be collected or a loss of test data, then the test shall be restarted from a point where it can be successfully completed with data to verify compliance with the Design Criteria Documents and the test procedures document.

13. If the System “crashes” during a test, then the test shall be stopped. “Crash” is defined as a failure in which the entire GTM System cannot properly process and collect data. The Vendor shall analyze the cause of the System “crash,” document the cause in a System problem report, responsively repair the flaw, and document the repair in a corrective action report. Only after Vendor has repaired flaw and SP PLUS accepts corrective action can the test be restarted from the beginning.

14. Where the System does not perform a function or incorrectly performs the function but the System does not crash, testing may continue, as long as the function is corrected and all of the following conditions are met:

i. The system performs all requisite functions properly;
ii. no personnel, vehicle or driver safety issue exists;

iii. transactional archiving operates in accordance with the Contract;

iv. failure does not cause loss or contamination of transactional data; and;

v. all reports balance and are 100% accurate.

15. Where the above criteria are not met, the test shall be stopped and corrective action taken and verified prior to testing restart from the point at which it was stopped.

16. During the ODT, the continued availability of the System shall be demonstrated. Where a failure occurs that causes data loss, System instability (crash), and/or contamination of the transactional data and the database, the Vendor shall immediately correct the problem. Testing shall continue until a consecutive 30 day period of stable operation is achieved. Stability is defined as the proper functioning of the GTM System with a failure having no impact on the continued System operation or on the integrity of transactional data.

C. Substantial Completion

The implementation of the GTM System shall be deemed substantially complete after successful completion of the ODT.

D. Punch List

Starting with the SAT through final System acceptance, the Vendor shall submit documentation on a weekly basis showing the status of all outstanding System issues, regardless of severity, including estimated completion dates for the correction of all outstanding issues.

E. Final Acceptance

1. A letter acknowledging final acceptance of the GTM System shall be issued by SP PLUS after successful completion of the ODT and the resolution of all outstanding Punch List items.

2. Only after SP PLUS has issued the final acceptance letter shall the warranty period begin, effective the date of final acceptance.

3.4 INSTRUCTION AND TRAINING

A. By means of instructional classes augmented by individual instruction as necessary, the Vendor shall fully instruct SP PLUS and BCAD Maintenance designated staff in the operation, adjustment, and maintenance of all products,
equipment, and systems. Should SP PLUS elect to procure any options, additional training will be required.

B. Scheduling of instruction classes shall be coordinated with SP PLUS and BCAD Maintenance to avoid conflicts and peak-period personnel demands. The Vendor shall submit a proposed instruction schedule, outline of the instruction material, and approximate duration of the sessions at least 30 days prior to the start of the ODT. SP PLUS shall tentatively approve or suggest changes to the training schedule at that time. Ample time shall be allotted within each session for the Vendor to fully describe and demonstrate all aspects of the GTM System and allow SP PLUS and BCAD personnel to have hands-on experience with the GTM System.

C. The training groups, the approximate number of staff to be instructed in each group, and the number of classes for each group are as follows:

1. Dispatchers:
   i. There will be a minimum of 30 dispatchers who trained in the general operation of the GTM System, with each dispatcher participating in two sessions. The first series of classes shall be conducted in the four weeks immediately before activation of the GTM System and shall consist of general System introduction and basic knowledge necessary to operate the System. The second session shall be conducted shortly after each dispatcher has had experience with the GTM System in an operational mode.
   
   ii. The length of each instruction class shall be 2 hours. There shall be at least two class dates at least three (3) days apart to include all shifts with the same block of instruction in each to ensure all staff can participate without undue loss of staffing for normal operations.

2. Supervisors:
   i. There will be a minimum of 12 supervisory personnel who shall be instructed in the operation of all components of the GTM System, with each Supervisor participating in two sessions. The first series of classes shall be conducted in the four weeks immediately before activation of the new GTM System and shall consist of a detailed System introduction and detailed knowledge necessary to operate the System. The second session shall be conducted shortly after each Supervisor has had experience with the new Systems in an operational mode.
   
   ii. The length of each instruction class shall be 2 hours. There shall be at least two class dates at least three (3) days apart to include all
shifts with the same block of instruction in each to ensure all staff can participate without undue loss of staffing for normal operations.

3. System Administrators:
   i. There will be approximately five (5) system administrators who shall be instructed in system administration and software.
   ii. The length of each instruction class shall be eight (8) hours. Each instruction block shall be provided in a minimum of two classes, each covering the same material, and scheduled to ensure all personnel can attend one of the classes without undue disruption of normal work schedules.

4. BCAD Maintenance Technicians:
   i. There will be approximately six facility and IT technicians who shall be instructed in providing a first line of defense for maintaining the GTM System. As such SP PLUS’s technicians shall be the first to be called to resolve a maintenance issue.
   ii. The technicians shall be trained and certified by the Vendor; the actions of the trained technicians shall not void any warranties or other guarantees offered by the Vendor.
   iii. The Vendor shall provide 24/7 hot line support to aid BCAD’s technicians.
   iv. The overall instruction program shall cover the operation and maintenance of all equipment and software associated with the GTM System.
   v. Vendor shall provide optional pricing to provide a more comprehensive training program for technicians covering all preventive and emergency service maintenance described in Section 1.12. SP PLUS may select this additional training should SP PLUS choose not to enter into a maintenance agreement with the Vendor.

D. All instruction courses shall consist of classroom instruction and actual “hands-on” experience. Classes shall be set up in a room designated by SP PLUS. The Vendor shall provide one instructor for the duration of each program. The instructor shall speak fluent English in a clear and precise manner. Class content shall be coordinated and developed with SP PLUS so that procedures for all functionalities are included. The class materials shall include schematics, an overview and descriptions of the equipment, and how individual circuits work within the equipment. SP PLUS and the County reserve the right to videotape all
training sessions for future instruction purposes or Vendor shall supply video demos if available.

E. The Vendor shall provide all documentation required for instructing SP PLUS and BCAD Maintenance personnel. Documentation shall be provided for each student in the form of workbooks, lecture notes/overheads, and manuals for student markup. The Vendor supplied instruction documentation shall be sufficiently detailed so that the user can in most cases resolve issues. SP PLUS and the County retain the right to copy training materials as frequently as required for ongoing internal use only.

F. An instructional notebook or user’s manual shall accompany every instruction course. The Vendor shall submit a hardcopy of the user’s manual per the submittal guidelines. The Vendor shall supply five bound hardcopies of each user manual type: starter/dispatcher, supervisory, System administrator, office/accounting, and technician. In addition, all manuals (instruction and maintenance) shall be submitted in electronic format (.PDF) on a CD-ROM. Two CD-ROMs shall be supplied. The user’s manuals shall be written in common English with appropriate photos, diagrams, and schematics to supplement the text.

G. At the completion of instruction courses, Vendor shall supply all SP PLUS and BCAD personnel that complete the course Certificates of Successful Completion.

END OF SECTION