

Roanoke – Blacksburg Regional Airport

Equipment Specification

RFP Number 21-001

Access and Revenue Control System

January 04, 2021



On behalf of the Roanoke Regional Airport Commission (RRAC), Interflight Parking Company (Interflight), invites you to submit a proposal for the installation of a new access and revenue control system for the parking facility at the Roanoke – Blacksburg Regional Airport. This Request for Proposal (RFP) is part of a competitive process designed to serve our client's best interests and to provide vendors a fair opportunity to offer their products and services for consideration.

The objective of this RFP is to install a new fully functioning access and revenue control system at the parking facilities identified in this RFP. As such, vendors must include all necessary civil, electrical, mechanical and administrative services as well as equipment and other hardware necessary to deliver a fully functional system. This includes, but is not limited to, loops, electrical and communication wiring both in the facilities and to the parking office, servers, computers, equipment movement and installation, conduit, concrete work, wire terminations, training, testing, programming, set-up services and two years of support service. The installation of the system at this facility will be awarded to a single vendor.

This document outlines the scope of the project as well as the process and timeline we expect all vendors to follow to collect additional information on the project and to submit a proposal to participate in the project. The information contained in this document defines the necessary steps for the Vendor to follow to have Interflight AND RRAC accept a proposal for consideration.

We will consider the following factors for selection; price, the vendor's ability to service and support the equipment, equipment features and reliability of product and experience with similar installations of the same size.

All local, state and federal laws, electrical and building codes must be adhered to by the selected vendor.

All proposals must be consistent with the format outlined below. Proposals must consist of itemized pricing for each equipment and/or software module as well as the services necessary to deliver a functioning system. In addition, proposals must include the cost to remove the existing equipment. The existing equipment will remain the property of ROA.

Complete electronic proposals in .PDF format; including price form in Excel[®] format, for this project are due January 29, 2021 @ 4 p.m. ET and must be submitted by email to:

RHawken@SecureParkingUSA.com

TMilliron@InterflightParking.com

GPosluszny@WalkerConsultants.com

Vendors must also furnish two (2) copies of its proposal to Interflight by the same date. Please note: if there are any discrepancies between the provided copies of the completed RFP, Interflight reserves the right to use the most favorable version as Vendor's response. Proposals received after the designated time will not be opened and will be removed from consideration. Telephoned and faxed proposals ***will not*** be accepted. All hard copy proposals should be mailed to:

***Tim Milliron, General Manager
Interflight Parking Company, LLC
5202 Aviation Drive
Roanoke, VA 24012***

Communications with Interflight Parking Company (IPC)

IMPORTANT: In order to preserve the fairness to all parties participating in the RFP process, you are not authorized to communicate with RRAC & Interflight personnel regarding the status of this RFP, ROA & Interflight's decision, or other questions related to the RFP process other than as expressly permitted by this Section. Violation of this Section may be grounds for RRAC & Interflight to disqualify a Supplier. All communications related to this RFP must be directed to the following contact:

Tim Milliron, General Manager
Interflight Parking Company, LLC
5202 Aviation Drive
Roanoke, VA 24012
540-362-0630
tmilliron@interflightparking.com

Questions. Any questions regarding this RFP must be submitted in writing to Tim Milliron by email to tmilliron@interflightparking.com by **January 8, 2021 @ 4 p.m. ET**. Interflight reserves the right, in its sole discretion, to select the questions to which it will respond, the questions that will be edited, and the questions and responses it will share with other suppliers. Due to the number of suppliers participating in the RFP, questions will not be taken or answered in any other manner.

Existing Business. This RFP does not restrict your day-to-day business or banking communication with Interflight or RRAC to facilitate pre-existing business matters. Any communications regarding this RFP outside the approved Interflight process specified in this RFP must not be authorized or binding.

Interflight will contact all vendors about the status and outcome of the RFP process after completing its review process for all suppliers. Interflight and RRAC also reserve the right to conduct a bidder's conference or to visit Supplier locations as part of this RFP process.

Oral, telephone, electronic, fax, or telegraphic bid modifications of the proposal will not be accepted.

All bid prices will be completed in ink or typed and must give actual cost of each product in line item pricing, lump sum discount will not be accepted. Proposals that are incomplete, conditional or obscure may be rejected as informal.

All work to be performed must be authorized in writing by either Interflight or RRAC prior to commencement of such work.

Information to be presented with the proposal must include: company qualifications; references and experience; personnel qualifications and experience; proposed equipment and software; project schedule; a proposed additional five-year standard maintenance contract; and proposed warranty language.

Any offer by the Vendor must remain open and irrevocable for a period of 120 days from the date of submitted proposal.

Interference of the Bid Process by any Vendor, employee of the Vendor, persons with vested interests, and/or persons with associated interests of the vendor will disqualify the Vendor’s proposal.

Under the terms of the Bid Process, Interference will be described as: “any effort by any person as stated above to sway, coerce, influence or otherwise affect the outcome of the bid process to their advantage by any means other than fulfilling the terms of the Contractual Documents.”

From the date of receipt of this RFP by each Vendor until a binding contractual agreement exists with the Selected Vendor and all other Vendors have been notified or when Interflight Parking rejects all proposals, informal communication regarding this procurement must cease.

Any failure to adhere to the provisions set forth above may result in the rejection of a Vendor’s proposal or cancellation of this RFP.

Any Vendor may withdraw its bid at any time before the date and time established for the opening of bids as stated above.

We will use the following timeline to manage the RFP process. Please take special notice of the planned Pre-bid Meeting and Proposal Submittal dates and times:

Issue RFP	January 4, 2021
Virtual Pre-Proposal Meeting	January 6, 2021 @ 10 a.m. ET
Project and RFP Questions submitted to Interflight	January 8, 2021 @ 4 p.m. ET
Interflight distributes answers to questions	January 12, 2021 @ 4 p.m. ET
Proposals due	January 29, 2021 @ 4 p.m. ET
Vendor Presentations (if applicable)	TBD
Projected Award Date	February 19, 2021

Evaluation

Interflight and ROA will determine which Vendor provides the most favorable combination of access and revenue control installation system in the most cost-effective manner by using an “Evaluation of Proposals.” Interflight and RRAC together will evaluate the Vendor’s bids. The recommendation and award will be based upon the factors listed below:

1. The relevant qualifications and experience of the Vendor necessary for the satisfactory design, manufacture, installation and testing of the access and revenue control system.
2. The relevant qualifications and the experience of key personnel committed to this project and their understanding of access and revenue control systems.

3. The relevant qualifications and experience of proposed subcontractors or similar installations.
4. The Vendor's understanding of the nature of the project, enhancements which are recommended, or exceptions taken, and warranty and maintenance agreement language.
5. The cost of the basic access control and revenue control system at each identified location.

Pre-Proposal Meeting

All prospective bidders are encouraged to attend a virtual Pre-Proposal Meeting with Interflight staff to discuss the project, review the RFP documents, and begin developing a list of vendor questions. A meeting invite will be sent to all interested parties sending their intentions to attend via email to Tim Milliron @ TMilliron@InterflightParking.com.

Disclaimer

This document is a Request for Proposals (RFP).

During the process of securing information relative to this bid, it is understood that information, which is proprietary to Interflight and RRAC, or to the Vendors, will be exchanged. Information regarding Interflight Parking and its related companies is proprietary, and will not be shared, published, or otherwise disclosed outside the Vendor's company without the express written consent of Interflight and RRAC. Equally, Interflight and RRAC pledge to guarantee the confidentiality of proprietary information provided by the Vendor, and that the aforesaid information will be made available only to Interflight's employees or agents who require access to same in fulfillment of their participation in this process. Said proprietary information will not be shared, published or otherwise disclosed without the express written consent of the Vendor.

Interflight and RRAC reserve the right to reject any or all proposals received. Non-acceptance of a proposal will mean that one or more others were deemed more advantageous to Interflight or that all proposals were rejected. Vendors whose proposals are not accepted will be notified after a binding contractual agreement between Interflight and the Selected Vendor exists or when Interflight rejects all proposals.

Interflight and RRAC intend to select a Vendor on the basis of proposals received in response to this RFP and any other information it obtains from other sources regarding the Vendor, including the site visitations by Interflight and ROA. A single vendor will be selected to implement the systems at the new facility.

There will be no appeal of the decision of Interflight and RRAC.

The selection of a Vendor and award of a bid will be subject to the successful negotiation and execution of a contract between RRAC and the selected Vendor. The laws of the State of Virginia will govern all contracts.

The Project

This project will be completed in two (2) phases. All new equipment will be installed in Phase I in temporary locations and relocated in Phase II. See Specification 111233 Section 1.4: Phasing Plan for further details.

This document requests proposals from qualified vendors to provide equipment and services to design, purchase, install, setup, test and maintain an access control and revenue control system at the parking facility at the Roanoke – Blacksburg Regional Airport. Testing of the system must be coordinated with Interflight and RRAC.

The proposed system must support the following parking operational technologies and services:

1. Barcode machine readable tickets / *QR Readers at entry point to support entry from a bar code, validation or access card system.
2. Ticket in / Credit Card out (In lane credit card pay station)
3. Vehicle count system
4. Ability to manage the Long Term, Short Term and Overflow facility from the parking office located at the exit plaza
5. High speed real time central credit card processing
6. Ability to support remote workstations
7. Ability to provide a program featuring Reservation/Validation/Loyalty System
8. License Plate Recognition (LPR)

No part of the currently installed system should be reused in the implementation of the proposed system. This includes gates, loops, ticket dispensing devices, ticket readers, computers, software, etc. This project is intended to be a completely new system.

The vendor's proposal must include the necessary installation, purchasing, and training services to implement a fully functional access and revenue control system. The proposal must also include the services and hardware necessary to maintain the equipment for the **two year** "Warranty Period" after the Go-Live date. In addition, each proposal must include pricing and a description of the approach to maintain the system for an additional five (5) years.

A critical objective the system must communicate in real time to a Facility Management Program with access in the parking office/or call center. An administrator at the parking office/or remote call center must have complete control of the new system.

The System must provide or interface with a robust Reservation/Validation/Loyalty program with a consumer facing web and mobile app capability. This project has selected HonkMobile.

Management of the new system shall be cloud based or software based and must not require any propriety management hardware (servers, storage facilities, etc.). If the solution is not

cloud based, all server and data storage management software must be compatible with VMWare ESXi 6.0.0 and will be installed on a Microsoft Windows Server which will be provided by the Commission. All data pertaining to the system shall be stored and maintained on premises. Data backups will be maintained by the Commission and shall be stored within the Commission's infrastructure.

The respondent must provide specification estimates with their proposal including, but not limited to, minimum and recommended server specifications, disk space requirements, and network infrastructure requirements. The respondent must provide all applicable network diagrams with their proposal and will coordinate all network infrastructure and configuration with the Commission's IT manager. Respondent must provide support contract information and software licensing information, including a projected schedule of fees, for a term of no less than seven (7) years after the completion of the project. Respondent must also provide end user and administrative training. System administration will be the responsibility of the Commission upon completion of the project.

The Commission will provide a network connection to the Commission's data network and to the internet. All logical addressing and network engineering, including information security policies, will be provided by and must be coordinated with Commission IT Management. The respondent will be responsible for network infrastructure relating to this project including, but not limited to, network switches, cabling infrastructure (fiber and copper), media converters, patch panels, and access points.

CONTRACT REQUIREMENTS

Contract

ROA and/or Interflight Parking may at its own election extend the warranty and maintenance period up to an additional five years after acceptance of the systems. Pricing for extended maintenance and warranty must be listed as an option and the pricing will stand for five (5) years.

Schedule

The Vendor must coordinate the installation of the parking control system with Interflight Parking and ROA for the facility. Weekly meetings with ROA must also be conducted in order to review progress of the work schedule. Schedules of site work must be submitted in advance for approval. The parking lot(s) must remain operational at all times during installation. It is the vendor's responsibility to ensure minimal interference for the airport customers, which might require some off-hours work, such as at nights and weekends.

Permits

The Vendor must be responsible for obtaining all permits, such as electrical permits, necessary for the installation of the systems. The Vendor must be responsible for performing all testing procedures necessary to comply with the permits.

Insurance

The Vendor must maintain during the entire term of the project, including the warranty period, workmen's compensation insurance, comprehensive general liability insurance, and comprehensive automobile liability insurance in accordance with the following minimums:

<u>Type of Insurance</u>	<u>Minimums of Liability</u>
Workmen's Compensation	Statutory (including Employer's Liability)
Comprehensive General	\$1,000,000 each person
Bodily Injury Liability	\$1,000,000 each occurrence
Property Damage Liability	\$1,00,000 each occurrence
Comprehensive Automobile	\$1,000,000 each person
Bodily Injury Liability	\$1,000,000 each occurrence
Property Damage Liability	\$1,000,000 each occurrence

Comprehensive General Liability includes but is not limited to: consumption or use of products, existence of equipment of machines on location, and contractual obligations to customers.

These policies will contain covenants requiring thirty (30) days written notice to Interflight Parking before cancellation, reduction, or the modifications of coverage. These policies will be primary and non-contributing with any insurance carried by the location and will contain a severability of interest's clause in respect to gross liability, protecting each named insured as though a separate policy had been issued to each. Said insurance coverage must name Interflight Parking, its directors, officers, and employees as additional named insured.

In the event that the Vendor fails to maintain and keep in force such insurance policies and coverage as herein provided, Interflight Parking will have the right to cancel and terminate this contract without notice. The Vendor must advise each insuring agency to automatically renew all policies and coverage in force at the start of and resulting from this contract until notified by the parties that coverage requirements are revised.

Certification for all the above insurance is to be delivered to the Interflight Parking or ROA within five working days of receipt of award notice. Failure to provide this information within this time limit may result in disqualification of the proposal.

Subcontractors

When subcontractors are involved in any part of the project, the Vendor's site supervisor must be on site to ensure compliance with all of the provisions of the Contract. It is also the responsibility of the Vendor to ensure compliance by its subcontractors to any and all provisions

of this contract. All contractors shall be Virginia Class A contractor and shall submit their contractor's license with the proposal.

Documentation, Shop Drawings, and Manuals

Prior to acceptance of the system, the Vendor must provide Interflight Parking and ROA with as-built drawings showing the actual location of each piece of equipment and of each conduit and communication run from equipment to panels and parking office.

One month prior to system acceptance testing, the Vendor must submit for approval a draft of the Vendor's copies of operating manuals.

Training

Before acceptance of the systems by Interflight Parking, the Vendor must train parking management personnel, employees, and airport personnel in the use of the system, including proper use of all parking system equipment, data base management and report generation software, supervisor functions and capabilities, and the use of audit functions. Vendor must submit a schedule for training to parking management for approval one month prior to the start of acceptance testing. The Vendor must budget at least thirty hours (30) of training time over a one-month period, followed by another fifteen hours (15) of refresher training to be scheduled within three months of acceptance. Per day pricing for additional training must also be included.

PAYMENT TERMS

The payment terms for this project are as follows:

- 20% upon order of equipment
- This payment will be made at the time the Purchase Order is issued
- 30% upon shipment to the location
- This payment is made once the equipment is received
- 30% upon substantial completion
- This payment is made once Interflight Parking or ROA have determined the system is operational
- 20% upon commissioning of the system
- This payment will be made at a minimum of 30 days after completion pending the approval of the system by an Interflight Parking or ROA representative.

SECTION 111233 - PARKING ACCESS AND REVENUE CONTROL SYSTEM (PARCS)

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract apply to this Section.

1.2 DEFINITIONS

- A. List of abbreviations:

1.	ADA	Americans with Disabilities Act
2.	ANSI	American National Standards Institute
3.	API	Application Programming Interface
4.	CFC	Cashier Fee Computer
5.	EMV	Europay, MasterCard, and Visa
6.	ENS	Entry Station
7.	EXS	Exit Station
8.	FACTA	Fair and Accurate Credit Transactions Act
9.	GUI	Graphical User Interface
10.	HDPE	High Density Polyethylene
11.	IRW	Image Review Workstation
12.	ISO	International Organization for Standardization
13.	LAT	Lane Acceptance Test
14.	LED	Light Emitting Diode
15.	LPD	License Plate Database
16.	LPI	License Plate Inventory
17.	LPN	License Plate Number
18.	LPR	License Plate Recognition
19.	NEMA	National Electrical Manufacturers Association
20.	NEC	National Electrical Code
21.	NFC	Near Field Communication
22.	ODBC	Open Database Connectivity
23.	ODT	Operational Demonstration Test
24.	PA-DSS	Payment Application Data Security Standard
25.	PARCS	Parking Access and Revenue Control System
26.	PCI	Payment Card Industry
27.	PCI P2PE	Payment Card Industry Point to Point Encryption
28.	PCI DSS	Payment Card Industry Data Security Standard
29.	PIN	Personal Identification Number
30.	POF	Pay on Foot
31.	QA/QC	Quality Assurance/Quality Control
32.	SDD	System Design Documents
33.	SDR	System Design Review
34.	SQL	Structured Query Language
35.	TES	Ticket Encoding Station
36.	UL	Underwriters Laboratories, Inc.
37.	UPS	Uninterruptible Power Supply
38.	VOIP	Voice over IP (internet Protocol)

1.3 SUMMARY

- A. This Section includes provisions to furnish all material, labor, equipment, services, and training to install an on-line, real-time Parking Access and Revenue Control System (PARCS) functioning in the manner described herein.
- B. The Roanoke-Blacksburg Regional Airport (“ROA”) parking lot is being redesigned and will feature a single entry/exit plaza once completed. The parking lot will remain open during construction which will be facilitated by a temporary exit plaza being constructed on the Western side of the parking lot at the Rental Car Lot exit. The new PARCS including one (1) cashier lane and one (1) credit card exit lane will be installed at this temporary exit plaza and will be relocated to the new permanent exit plaza in what will be referred to as “Phase 2”. Reference Section 1.4: Phasing Plan for further details.
- C. References in this section to “Contractor” include any Subcontractor performing Work related to the PARCS.
- D. Identify any clarifications, deficiencies, exceptions or errors in the Specifications or Drawings in Contractor proposal. Deficiencies or discrepancies in the Specifications or Drawings do not relieve the Contractor of the responsibility to provide a fully functional, reliable PARCS as intended by the design. Clarifications and exceptions to the design taken by the Contractor must be clearly stated in the proposal and are subject to Owner approval.
- E. PARCS Project Objectives:
 - 1. Remove and replace existing PARCS Equipment with new PARCS having State-Of-The-Art Technologies with robust functionality and reliability.
 - 2. Provide warranty and support services for a Two-Year period following installation.
 - 3. Provide certified PCI P2PE credit card processing such that the PARCS can read chip-based, mag-stripe, and contactless credit cards (including mobile CC Apps) and accept PIN inputs where required.
 - 4. PA-DSS certified system with tokenization for card-not-present transactions.
 - 5. Utilize various payment options for parking, including:
 - a. Pre-Paid Reservations through API integration with HonkMobile
 - b. Pay-on-Foot (POF) stations – Bills and Credit, or Credit only (Add Alternate)
 - c. Bankcards – Visa, MasterCard, American Express, Discover (chip, mag-stripe, and contactless)
 - d. NFC-based payments from mobile devices (Google Pay/Apple Pay, etc.)
 - 6. Provide flexibility in offering new parking programs:
 - a. Mobile Hand-Held Cashiering
 - b. Decrementing Value Proximity card with the ability to reload value on-line or at POF
 - 7. Accurately document financial and statistical data for the parking operation.
- F. Specific PARCS Requirements
 - 1. A new Parking Access and Revenue Control System (PARCS) will accompany the new parking lot configuration. The new PARCS will also be installed in the current “Overflow” parking lot on the Eastern side of Aviation Drive NW.
 - 2. The new PARCS will be installed in two (2) phases. Reference Section 1.4: Phasing Plan for further details.
 - 3. The new PARCS for the Overflow lot will include one (1) entry lane and two (2) exit lanes.
 - a. Vendor to provide Saw-Cutting, Trenching, Concrete Infrastructure, and New Electrical and Communications conduits including wiring required for new PARCS; including for LPR if procured.
 - b. Fiber optic communication cabling will be provided from the terminal to a location within the Overflow Lot entry/exit plaza by the owner.
 - 4. The new PARCS for the reconfigured Short-Term and Long-Term combined lot will include two (2) entry lanes, two (2) exit lanes, and one (1) reversing lane in the center of the new entry/exit plaza (total of three

- (3) in and three (3) out). The Short-Term parking area will be accessed via two (2) “nested area” entry lanes and two (2) “nested area” exit lanes.
- a. All required concrete, conduit, and infrastructure shall be provided by the Owner as a portion of the construction project.
 - b. Fiber optic communication cabling will be provided from the terminal to a location within the new parking office and the new short-term nesting lanes.
5. The PARCS Facility Management Software will be housed within a virtual server environment provided by ROA in their current server room. A cloud-based FMS is an acceptable alternative to on-site software. Communication between the parking equipment and the FMS will be via ROA provided Fiber Optic Networking.
- a. Management of the new system shall be cloud based or software based and must not require any propriety management hardware (servers, storage facilities, etc.). If the solution is not cloud based, all server and data storage management software must be compatible with VMWare ESXi 6.0.0 and will be installed on a Microsoft Windows Server which will be provided by the Commission. All data pertaining to the system shall be stored and maintained on premises. Data backups will be maintained by the Commission and shall be stored within the Commission’s infrastructure.
 - b. The respondent must provide specification estimates with their proposal including, but not limited to, minimum and recommended server specifications, disk space requirements, and network infrastructure requirements. The respondent must provide all applicable network diagrams with their proposal and will coordinate all network infrastructure and configuration with the Commission’s IT manager. Respondent must provide support contract information and software licensing information, including a projected schedule of fees, for a term of no less than seven (7) years after the completion of the project. Respondent must also provide end user and administrative training. System administration will be the responsibility of the Commission upon completion of the project.
 - c. The Commission will provide a network connection to the Commission’s data network and to the internet. All logical addressing and network engineering, including information security policies, will be provided by and must be coordinated with Commission IT Management. The respondent will be responsible for network infrastructure relating to this project including, but not limited to, network switches, cabling infrastructure (fiber and copper), media converters, patch panels, and access points.
6. License Plate Recognition (LPR) as described herein will be priced as an ADD ALTERNATE. If LPR is procured as the ADD ALTERNATE, LPR will replace all AVI Readers and applicable hardware and software for AVI System.
- a. All required concrete, conduit, and infrastructure at the new entry/exit plaza shall be provided by the Owner as a portion of the construction project to facilitate LPR in phase 2.
 - b. All required saw-cutting, trenching, concrete, conduit, and associated wiring for LPR in Overflow Lot will be provided by the PARCS vendor as a portion of these specifications.
7. Pay-on-Foot (POF) kiosks as described herein will be priced as an ADD ALTERNATE. POF exact location to be determined, but any required concrete, conduit, power and fiber optic cabling, and infrastructure required will be provided by the Owner.
- G. Summary of Parking Equipment:
1. Overflow Entry/Exit Plaza:
 - a. One (1) Entry Lane Equipped with:
 - 1) Ticket Dispenser (ENS) with integrated:
 - a) Proximity Card Reader
 - b) QR/Barcode Reader

- c) Intercom Substation with Pin-hole Camera
 - 2) Automated Barrier Gate
 - a) Straight Barrier Arm
 - b) Dual Loop Detector
 - c) Two (2) Inductive Loops
 - 3) Pole-Mounted AVI Reader
 - 4) LPR Camera (Pole-Mounted) (Add Alternate)
 - a) LPR Quick Sensitive Loop Detector
 - b) LPR Inductive Loop
 - 5) Protective Bollards
 - 6) In-Lane On-Line UPS Backup
 - b. Two (2) Exit Lanes Equipped with:
 - 1) Ticket Verifier (EXS) with integrated:
 - a) EMV PCI-P2PE Credit Card Reader
(Chip, Mag-Stripe, and Contactless all-in-one)
 - b) Proximity Card Reader
 - c) QR/Barcode Reader
 - d) Intercom Substation with Pin-hole Camera
 - 2) Automated Barrier Gate
 - a) Straight Barrier Arm
 - b) Dual Loop Detector
 - c) Two (2) Inductive Loops
 - 3) Pole-Mounted AVI Reader
 - 4) LPR Camera (Pole-Mounted) (Add Alternate)
 - a) LPR Quick Sensitive Loop Detector
 - b) LPR Inductive Loop
 - 5) Protective Bollards
 - 6) In-Lane On-Line UPS Backup
- 2. Long-Term Entry/Exit Plaza:
 - a. Three (3) Entry Lanes Equipped with:
 - 1) Ticket Dispenser (ENS) with integrated:
 - a) Proximity Card Reader
 - b) QR/Barcode Reader
 - c) Intercom Substation with Pin-hole Camera
 - 2) Automated Barrier Gate
 - a) Straight Barrier Arm
 - b) Dual Loop Detector
 - c) Two (2) Inductive Loops
 - 3) Pole-Mounted AVI Reader
 - 4) LPR Camera (Pole-Mounted) (Add Alternate)
 - a) LPR Quick Sensitive Loop Detector
 - b) LPR Inductive Loop
 - 5) Integrated Signage (Canopy Mounted)
 - 6) Protective Bollards
 - b. Two (2) Exit Lanes Equipped with:
 - 1) Ticket Verifier (EXS) with integrated:
 - a) EMV PCI-P2PE Credit Card Reader
(Chip, Mag-Stripe, and Contactless all-in-one)
 - b) Proximity Card Reader
 - c) QR/Barcode Reader

- d) Intercom Substation with Pin-hole Camera
- 2) Automated Barrier Gate
 - a) Straight Barrier Arm
 - b) Dual Loop Detector
 - c) Two (2) Inductive Loops
- 3) Pole-Mounted AVI Reader
- 4) LPR Camera (Pole-Mounted) (Add Alternate)
 - a) LPR Quick Sensitive Loop Detector
 - b) LPR Inductive Loop
- 5) Integrated Signage (Canopy Mounted)
- 6) Protective Bollards
- c. One (1) Exit Lanes Equipped with:
 - 1) Cashier Fee Computer (CFC) with:
 - a) EMV PCI-P2PE Credit Card Reader (Chip, Mag-Stripe, and Contactless all-in-one)
 - b) QR/Barcode Reader
 - c) Intercom Substation in booth
 - 2) Ticket Verifier (EXS) with integrated:
 - a) EMV PCI-P2PE Credit Card Reader (Chip, Mag-Stripe, and Contactless all-in-one)
 - b) Proximity Card Reader
 - c) QR/Barcode Reader
 - d) Intercom Substation with Pin-hole Camera
 - 3) Automated Barrier Gate
 - a) Straight Barrier Arm
 - b) Dual Loop Detector
 - c) Two (2) Inductive Loops
 - 4) Pole-Mounted AVI Reader
 - 5) LPR Camera (Pole-Mounted) (Add Alternate)
 - a) LPR Quick Sensitive Loop Detector
 - b) LPR Inductive Loop
 - 6) Integrated Signage (Canopy Mounted)
 - 7) Protective Bollards
- 3. Nested Short-Term Entry/Exit Lanes:
 - a. Four (4) Nested Lanes Equipped with:
 - 1) Ticket Encoder Station (TES) with integrated:
 - a) Proximity Card Reader
 - b) QR/Barcode Reader
 - c) Intercom Substation with Pin-hole Camera
 - 2) Automated Barrier Gate
 - a) Straight Barrier Arm
 - b) Dual Loop Detector
 - c) Two (2) Inductive Loops
 - 3) Pole-Mounted AVI Reader
 - 4) LPR Camera (Pole-Mounted) (Add Alternate)
 - a) LPR Quick Sensitive Loop Detector
 - b) LPR Inductive Loop
 - 5) Entry Lanes with Integrated Signage (Pole Mounted)
 - 6) Protective Bollards
- 4. Covered Walkway (Add Alternate)

- a. One (1) Pay-on-Foot Equipped with:
 - 1) Credit Card only POF.
 - 2) Integrated on POF:
 - a) EMV Credit Card Reader
(Chip, Mag-Stripe, and Contactless all-in-one)
 - b) Barcode/QR reader
 - c) Intercom Substation
 - b. One (1) Pay-on-Foot Equipped with:
 - 1) Cash (Bill Only) and Credit Card POF.
 - 2) Integrated on POF:
 - a) Bill Acceptor/Recycler/Dispenser
 - b) EMV Credit Card Reader
(Chip, Mag-Stripe, and Contactless all-in-one)
 - c) Barcode/QR reader
 - d) Intercom Substation
5. Parking Office
- a. One (1) PARCS Workstation with Monitor (min. 24”), Keyboard, Mouse, Web-Cam, and Speakers
 - b. Networked Laser Printer
 - c. Intercom Server
 - d. Intercom Master Station
 - e. Three (3) Off-Line Validators
 - f. Two (2) On-Line UPS Backup Stock:
 - g. Owner approved parking tickets:
 - 1) 60,000 or equivalent in roll stock
 - h. Owner approved receipt tickets:
 - 1) 100,000 or equivalent in roll stock
 - i. 100 proximity cards
 - j. 100 AVI Tags
 - k. 10 barrier gate arm assemblies
 - l. 50 breakaway bolts or clips if so equipped
6. Main Distribution Frame (MDF) Room
- a. PARCS Facility Management Software
 - b. LPR Software (Add Alternate)
 - c. Cloud-Based software is an acceptable alternative
 - d. Open API integration with HonkMobile
 - e. Two (2) Remote Licenses for ROA Provided Workstations
 - f. Two (2) Remote Licenses for ROA Provided Mobile Devices
- H. See Drawings for parking equipment count summary, bollard count summary, and equipment locations.
- I. Standard Work Included:
- 1. Review Drawings and Specifications to be certain that all functional requirements, as described, can be achieved with equipment to be supplied.
 - 2. Provide and install all PARCS equipment as described in this Specification and as detailed in Section 1.4: Phasing Plan.
 - 3. Provide and install all software, ancillary components, and materials to provide a complete and functioning PARCS.
 - 4. Coordinate IP Scheming and Port-Forwarding with Owner’s or Operator’s IT department.

5. Provide and install all necessary communications wiring and additional conduit required for the PARCS. Fiber Optic Cabling will be provided to each PARCS lane and/or Plaza.
6. Provide and install all ancillary communications equipment for communication network. Terminate and connect all communications cabling.
7. Provide and install any power conditioning that is required for the operation of the system.
8. Provide and install mounting structures necessary for the PARCS equipment.
9. Comply with all applicable State and Federal codes and standards.
10. Provide Submittals as specified herein.
11. Coordinate and confirm final and precise layout of PARCS equipment, mounting structures, conduits, stubs, and anchor bolts with Owner prior to installation.
12. Install all PARCS supplied equipment and the interconnection with any Owner supplied equipment.
13. Authorize and accept responsibility for application of power to equipment and initiation of operation.
14. Run all initial diagnostics and system testing necessary to provide a complete working system.
15. Attend construction meetings, provide schedules as requested, and schedule fieldwork to be coordinated with Owner.
16. Test equipment in accordance with this specification.
17. Provide as-built drawings, operating manuals, maintenance procedures manuals, and training sessions as specified herein.
18. Participate in system commissioning as required.
19. Provide warranty services as required.

J. Work Excluded:

1. Procurement and programming of Firewall – Coordinate with Owner’s or Operator’s IT Department.
2. Procurement and maintenance of Internet Service – Provide minimum requirements upon contract award.
3. Provision and installation of electrical and communication conduit from Electrical Closets and MDFs to equipment locations.
4. Provision and installation of electrical and communication cabling from Electrical Closets and MDFs to equipment locations.
5. Termination of Fiber Optic Cabling.

K. PARCS Future System Expansion:

1. Readily upgradable, scalable, and modular in design to accommodate additional equipment, parking facilities, features and functionalities including the following:
 - a. Additional PARCS field devices
 - b. Additional parking facilities.
 - c. Additional functionalities (e.g. loyalty programs, connected cars, Bluetooth, etc.)
 - d. Interface with open API’s to add parking availability to websites
 - e. Interface with open API’s for adding third party applications
 - f. Firmware or software upgrades without the need to replace field devices.

1.4 PHASING PLAN

A. Phase 1:

1. Backend Software and any required hardware and initial programming.
2. Install workstation, Intercom Server, and Intercom Master Station in temporary booth.
3. Install POFs if procured. Provide covers with signage “Coming Soon”.
4. Remove, Install, and finalize Overflow Lot PARCS equipment – All new PARCS equipment.
5. Removal and Installation of Two (2) Short-Term Entry Lanes.
 - a. Reuse existing loops if tested as reusable

- b. Reuse AVI readers if LPR is procured
 - c. Reuse Bollards
 - d. Do not include LPR.
 6. Removal and Installation of One (1) Long-Term Entry Lane.
 - a. Reuse existing loops if tested as reusable
 - b. Reuse AVI readers if LPR is procured
 - c. Reuse Bollards
 - d. Do not include LPR.
 7. Temporary installation of One (1) Exit Lane.
 - a. EXS
 - b. Barrier Gate
 - c. Reuse AVI Reader if LPR is procured
 - d. Vehicle Detection Loops
 - e. Bollards
 - f. Do not include LPR.
 8. Temporary installation of One (1) Exit Lane.
 - a. CFC
 - b. Do not include EXS
 - c. Barrier Gate
 - d. Reuse AVI Reader if LPR is procured
 - e. Vehicle Detection Loops
 - f. Bollards
 - g. Do not include LPR.
 9. Remove POF covers and commission POFs into service.
- B. Phase 2:
 1. Install one (1) automated Exit Lane to the new Entry/Exit plaza.
 2. Relocate and finalize installation of one (1) Entry Lane previously installed in Phase1 to the new Entry/Exit Plaza.
 3. Relocate and finalize installation of workstation, intercom server, and intercom master station to new Parking Office.
 4. Open new Entry/Exit Plaza
 5. Relocate and finalize installation of remaining two (2) Entry and two (2) Exit Lanes to the new Entry/Exit Plaza.
 6. Install four (4) nesting lanes.

1.5 REQUIRED MEETINGS

- A. System Design Review (SDR) meeting: Conduct initial SDR meeting within thirty (30) days of contract award (after final contract negotiations) and follow-up as needed. Purpose of SDR is to provide required information to contractor, and review the Contractor's System Design Documents (SDD), which include the following Proposal Submittals and Informational Submittals:
 1. Data Request Form for system programming
 - a. Facility name (s) and address (es)
 - b. Lane ID information
 - c. Parking rates and hours
 - d. Contract customer information
 - e. Validation providers and validations
 - f. Receipt imprint information
 - g. Other data requests per vendor
 2. Product Data Submittals

3. Typical Lane Layouts
4. Project Schedule
5. Phasing Plan
6. Samples
7. Training Plan
8. Testing Plan

B. Pre-Installation Meeting: Coordinate meeting with General Contractor in advance of time scheduled for work to proceed to review requirements and conditions that could interfere with successful PARCS implementation. All parties concerned with PARCS installation including electrical, communications, concrete/asphalt work, or others who are required to coordinate work should attend. Include the Owner or their representatives. At a minimum, cover:

1. Required preparatory work
2. Site safety and security requirements
3. Required work areas and laydown requirements
4. Review installation and implementation schedule
5. Review testing and acceptance procedures

1.6 SUBMITTALS

A. Provide all Submittals in accordance with Division 1 of the specifications

1. All submittal approvals, comments and rejections will be returned to the Contractor by the Owner's designated representative. Required Submittals must be resubmitted until accepted. Provide cover letter indicating the submittal purpose with area for comments and stamp by Owner's representative. Responses will be returned indicating one of the following with additional notes as needed:
 - a. "No Exception Taken" – accepted submittal
 - b. "Rejected" – resubmittal required
 - c. "Submittal Not Required No Review Performed" – no further action needed
 - d. "Make Corrections Noted Resubmittal Not Required" - accepted, but take corrective action
 - e. "Revise and Resubmit" – resubmittal required

B. Proposal Submittals – include in your proposal:

1. Price Proposal Form with total PARCS cost and unit cost of each component
 - a. Add/alternate items
 - 1) Service contracts for an additional five (5) years
 - 2) Warranty contracts for an additional five (5) years
 - 3) POF System
 - A) Service costs for an additional five (5) years
 - B) Warranty costs for an additional five (5) years
 - 4) LPR System
 - A) Service costs for an additional five (5) years
 - B) Warranty costs for an additional five (5) years
 - b. Direct Recurring Fees (SaaS) for a total of six (6) years
2. Company Information
 - a. Provide the following company information:
 - 1) Name of your company and address.
 - 2) Name and contact information (email and phone number) of Primary Contact

- b. Description of the Company's presence in the local area including the street address of the nearest service center for PARCS maintenance and repairs.
 - 1) Number of service technicians in the nearest service center.
 3. Provide a list of any subcontractors, their business address, and a brief summary of their role in the project.
 4. Document Minimum Qualifications for Installer and Equipment Manufacturer per Section 1.7, Quality Assurance.
 5. Project Approach – Submit the following:
 - a. Executive summary of your team's proposed PARCS solution for completing the scope of work, as described in the RFP documents:
 - 1) Clearly identify what hardware and software products and features are included.
 - 2) Clearly identify any optional PARCS features and functionalities that will enhance customer service and facilitate greater operational efficiencies.
 - 3) Description of the Contractor's approach for post-installation warranty, service, and support.
 6. Project Schedule based on the anticipated project milestone dates including:
 - a. Anticipated start date
 - b. Manufacturing and shipping
 - c. Preparatory work
 - d. Installation
 - e. Testing
 - f. Training
 - g. Go live date
 7. Product Data Submittals:
 - a. List of each primary component of system and the manufacturer.
 - b. Cut sheets in electronic format and/or in separate document for the following PARCS equipment:
 - 1) Barrier Gate (BG)
 - 2) Credit Card Reader
 - 3) Entry Station (ENS)
 - 4) Exit Station (EXS)
 - 5) Intercom System
 - 6) LPR Cameras
 - 7) POF machines
 - 8) UPS devices
 - 9) Software application and version (s)
 8. PARCS standard reports list.
 9. Exceptions and Substitutions:
 - a. Substitutions: Where functional performance features or quality of system varies materially from that specified, identify substitution being proposed. Include catalog sheets, brochures, and/or technical specifications of the proposed substitution.
 - b. Exceptions: Provide an all-inclusive list of all exceptions taken to any part or parts of these Specifications (including substitutions).
 10. Warranty:
 - a. Submit copy of warranty and explanation of any instances which may impact warranty coverage.
 - b. Define service level offered in this proposal including response times, hours of support, etc.
 - c. Define optional service levels available
- C. Informational Submittals – After Project Award, prior to initial SDR meeting.
 1. Internet upload and download requirements
 2. Detailed Project Schedule for implementation, training, and testing including:
 - a. Coordinate project schedule with general contractor and other trades
 - b. Project plan in Gantt chart format generated using currently supported Microsoft Project or similar program approved by Owner
 - c. Milestone dates clearly identified, including staff training and testing

- d. Task start and completion dates
 - e. Phasing for installation of field devices, performance of acceptance testing, and activation for public use
 3. Shop Drawings
 - a. Mounting details for PARCS equipment, per manufacturer recommendations
 - b. Wiring diagrams detailing wiring requirements for power, signal, and control systems
 - c. Clearly indicate work that is "not in contract"
 - d. Locations for electrical and communications connection points and pathways including conduit runs, network access points, power panels and circuits, and server location
 4. List of manufacturer's recommended spare parts specific to this installation, including:
 - a. Part name
 - b. Part number
 - c. Unit price
 - d. Quantity
 - e. Total Cost
 5. Samples: submit samples of tickets, reports, and other items requiring selection as part of the SDR meeting.
 6. Schematic diagram showing communication between head end equipment and field devices.
 7. Training Plan: submit a proposed instruction schedule as part of the SDR meeting. The Owner shall tentatively approve or suggest changes to the training schedule at that time. Fourteen calendar days prior to each instruction session, the Contractor shall submit an outline of the instruction material and approximate duration of the session. Ample time shall be allotted within each session for the Contractor to fully describe and demonstrate all aspects of the PARCS and allow Owner personnel to have hands-on experience with the PARCS.
 8. Testing Plan to be submitted as part of the SDR meeting:
 - a. Plan for testing all system functionalities that are described in this Functional Specification as well as any other functionalities performed by the system (e.g. standard functionalities included in the PARCS) that are not specifically described within this Functional Specification.
 - b. Owner to return review comments to the Contractor and Contractor to incorporate the Owner's review comments into the Test Procedures. Resubmit the revised document for verification that all comments have been incorporated. Approved document will be termed the Test Procedures Document.
 - c. Approval of finalized Test Procedures Document is required prior to commencement of any test.
 9. PARCS Manuals to be submitted 30-days prior to commencement of testing: Owner to review the structure and contents of the manuals and return comments to the Contractor. Contractor to discuss comments and where possible provide additional clarification to the manuals. Contractor to submit revised manuals as appropriate prior to commencing system testing. Submit the following manuals in both hardcopy and electronic (PDF) format:
 - a. PARCS user's manuals
 - b. PARCS subsystem manuals
 - c. PARCS maintenance procedures manual
 - d. Training manuals
- D. Closeout Submittals
1. Copies of all licenses, registrations, documentation, disks and other media as may have been included with those commercially available software packages provided with system to be submitted prior to commencement of testing. In addition, ensure that all licenses, registrations and warranties have been transferred to Owner prior to final software turnover.
 2. As-Built Documentation: Submit as-built documentation of all systems and components installed as part of the PARCS. Include drawings of the actual installed conditions of all equipment and cabling components and configuration settings upon the completion of any acceptance test. Contractor shall update the most recent as-built documentation submitted as further changes occur in the field or as a result of a patch or upgrade to an installed system throughout the warranty period.

- a. Provide a list of all TCP/IP devices with each device's IP address, MAC address, and general description of the installation location.
3. Stock: Furnish the following supply of operating stock items prior to installation.
 - a. Owner approved parking tickets:
 - 1) 60,000 or equivalent in roll stock
 - b. Owner approved receipt tickets:
 - 1) 100,000 or equivalent in roll stock
 - c. 100 proximity cards
 - d. 100 AVI tags
 - e. 10 barrier gate arm assemblies
 - f. 50 breakaway bolts or clips if so equipped

E. Maintenance Material Submittals

1. Spare (repair) Parts: Deliver spare (repair) parts per the approved spare parts list, complete and ready to use, prior to commencement of testing and maintain inventory of spare components at this level as components are used during warranty period.
 - a. Propose a list of manufacturer's recommended spare parts (type and quantity) to be maintained on site. Identify and price separately in the proposal the list of all spare parts required to maintain the system under the submitted maintenance procedures manual.
 - b. The Owner reserves the right to order additional parts and manage the PARCS spare parts inventory as required to maintain the system.
 - c. The proposed spare parts list is subject to the approval of the Owner, and the Owner reserves the right to modify the spare parts inventory throughout the term of the Contract.
 - d. Owner will provide a storage location of the spare parts, exact location to be identified by the Owner. Contractor to have access to the spare parts inventory and is responsible for ordering replacement components or parts during the implementation and warranty period as components or parts are used.
 - e. All equipment and parts to be newly manufactured and never installed in any other operational system.
 - f. Provide an itemized list of manufacturer's part numbers, model numbers, pricing, supplier's address, supplier's telephone numbers, and any single source components when delivered to the project site.
 - g. Provide a software/database monitoring tool for tracking the inventory and usage of spare parts.
2. Equipment Keys
 - a. Provide two (2) sets of keys for each unit of equipment with locks.
 - b. All equipment and enclosures of the same type (ENS, EXS, POF, Cash Vaults, Gates, etc.) have the same key and equipment of different types have different keys.
 - c. Keys are unique to this project; other equipment supplied by the same manufacturer in the region cannot use the key provided for this project site.
 - d. POF doors and internal vaults cannot be keyed the same and must be high security mechanical keys. Web-keys are not acceptable.
 - 1) POF Door
 - 2) POF access to release bill vault
 - 3) "Cash Room" to open bill vault
 - e. If a special tool is required to perform any function on the PARCS during the normal course of business and/or maintenance, provide three of these tools.

1.7 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. In continuous operations in the United States for previous five years.

2. Primary components installed and operating in three or more US Cities with facilities of similar size and complexity. Provide the following for each installation.
 - a. Name of project
 - b. Location
 - c. Contact name, telephone number and email address
 - d. Date of installation
 - e. Number of facilities and lanes
 - f. Description of equipment and quantities
 - g. Payments accepted
 - h. Credential types utilized
 - i. Photos of installed PARCS

- B. Installer Qualifications (if Installer is a different entity than the manufacturer):
 1. Proven ability to install equipment and provide appropriate and required service and support after installation.
 2. Continuously worked with equipment manufacturer, or another PARCS manufacturer, including providing installations and maintenance for a minimum of five years.
 3. Approved in writing by PARCS manufacturer(s).
 4. Three comparable installations of proposed manufacturer's equipment in parking facilities of similar size and complexity in past five years. Provide the following for each installation.
 - a. Name of project
 - b. Location
 - c. Contact name, telephone number and email address
 - d. Date of installation
 - e. Number of lanes
 - f. Description of equipment and quantities
 - g. Payments accepted
 - h. Credential types utilized
 - i. Photos of installed PARCS

- C. All PARCS components and their installation shall comply with all laws, ordinances, codes, rules, and regulations of public authorities having jurisdiction over this part of the work. It shall be the responsibility of the Contractor to meet these and all other current technical, performance, and safety standards that are applicable to all components and to the entire system, even when not specifically referenced.

- D. Obtain all permits that are required to complete this work.

- E. All materials and equipment required to be listed, labeled, or certified by a nationally recognized testing laboratory to meet Underwriters Laboratories, Inc. (UL), standards where test standards have been established.
 1. 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 product data.

- F. Equipment housings, conduits, and junction boxes exposed to weather (any location not in a conditioned environment) shall meet or exceed IP65 standards. Components that do not meet IP65 standards or better may be considered if implemented with supplemental environmental controls such as air conditioners and dehumidifiers.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Contractor shall be responsible for replacing any items damaged during shipping, by expedited means if required to maintain installation schedule, at no additional cost to the Owner.
- B. Coordinate designated storage/staging area(s) for PARCS equipment that has not been installed prior to shipping to site to ensure area is sufficient and available.
- C. It is the Contractor's responsibility to protect the equipment from theft and damage until final acceptance. This may include installation of fencing, locks, and any other security provision deemed necessary by Contractor. Should the stored equipment be stolen or damaged prior to final acceptance, the Contractor shall replace the equipment at no additional cost to the Owner.
- D. Deliver equipment to site in manufacturer's original containers to prevent damage and marked for easy identification.

1.9 PROJECT/SITE CONDITIONS

- A. Installation of new PARCS in Roanoke, VA.
- B. Environmental Conditions: All field equipment and components shall be fully protected from the ambient environment when installed in the proper housing provided by the Contractor. Operation of the equipment shall not be affected in any way by weather conditions typical to the installation area. 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 99% (non-condensing)
 - 3. Rain: Blowing rain with 80 mph gusts
 - 4. Dust: Accumulating and blowing dust and fine sand
- C. Provide a system such that environmental conditions in a cabinet do not cause failure of the installed electronics.
- 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 PARCS.
 - 1. Provide surge protection on all electrical and communications wiring.
 - 2. Provide lightning protection through surge arrestors or earthen ground rods or a combination thereof for the PARCS. Determine, based upon the PARCS manufacturer's system requirements, the appropriate lightning protection method to use for the location where the equipment is installed.
 - 3. Provide equipment that is UL-approved for use as part of a master labeled lightning protection system and marked in accordance with UL procedures.
- E. Any new islands or pads containing PARCS equipment must not be poured until stub ups and any necessary anchor bolts are properly placed and verified by the Contractor. Any conflicts with installation at a specific location must be resolved prior to pouring lanes and pads for PARCS equipment.

1.10 PROJECT SEQUENCING

- A. Propose sequencing in the Project Schedule that achieves full implementation and acceptance of the PARCS in accordance with the Contract Documents, including these functional specifications. Coordination required during overall project construction.
- B. Review Phasing Plan as described in this specification document for additional sequencing requirements.

1.11 WARRANTY, SERVICE AND SUPPORT (INITIAL PERIOD)

- A. Warranty period on the PARCS starts upon notification from the Owner of Final System Acceptance.
- B. Warranty all parts, materials, and workmanship following Final System Acceptance for a period of 24 months (2 years). Inclusive of ALL costs (parts, labor, maintenance, software support, warranty repairs, Contractor travel time, Contractor expenses, etc.) incurred during the warranty period to be provided without additional cost to the Owner.
- C. 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 Owner or the using public are excluded as a warranty requirement. Also excluded from the warranty are damages due to Acts of God. Contractor costs related to these non-warranty repairs can be invoiced to the Owner on a time and materials basis.
- D. Warranty response period
 1. Monday through Friday, 8:00 am to 5:00 pm local time; excluding Nationally Recognized Holidays.
 2. Response time from initiation of service request call to on-site response by qualified service technician cannot exceed four (4) hours.
 3. Repair or replace all defective or damaged items by end of the following business day.
- E. Preventive Maintenance Service during the Warranty Period:
 1. Provide preventive maintenance services for all systems throughout the warranty period. Preventive maintenance procedures and frequencies to be performed at a minimum quarterly interval.
 2. Preventive maintenance services include but are not limited to inspection, testing, necessary adjustment, alignments, calibration, external cleaning, parts cleaning, battery replacement, communication system maintenance, server administration and database administration of the PARCS provided by the Contractor.
 3. Perform all preventive maintenance at non-peak periods during regular business hours.
- F. Emergency Maintenance Service during the Warranty Period:
 1. Conditions requiring emergency maintenance services by the Contractor are conditions in which a lane, PARCS device, or group of devices become unusable due to malfunction, failure, or damage and the condition cannot be remedied by Owner personnel.
 2. Provide three (3) methods of notification to be used for emergency contact information (ex: telephone, email, SMS text message). Acknowledge receipt of any emergency service request within 60 minutes of notification by the Owner within normal business hours.
 3. Begin remote emergency repair service within two (2) hours of the initial emergency service request by the Owner within normal business hours.
 4. Begin onsite emergency repair service within four (4) hours of the initial emergency service request by the Owner within normal business hours.
 5. Upon request by owner or owner's agent; begin remote emergency repair service within four (4) hours of the initial emergency service request by the Owner outside of normal business hours and on nationally recognized holidays.
 6. Upon request by owner or owner's agent; begin onsite emergency repair service within twenty-four (24) hours of the initial emergency service request by the Owner outside of normal business hours and on nationally recognized holidays.
 7. Factors beyond the control of the Contractor, such as unexpected delays in parts, accidents, severe weather, and unusual traffic, require thorough documentation to be submitted to the Owner the next business day. The Owner may grant relief for the service hour requirement after reviewing these factors.
- G. Software Support during the Warranty Period:

1. Provide on-site and remote software support for PARCS and all 3rd party software applications.
2. Make available to the Owner normal PARCS software improvement releases (updates) within the current release version when they become available at no additional cost to the Owner.
3. No upgrades to newly released versions are expected in this support during this warranty period. Provide optional upgrades and pricing for owner's consideration when new releases become available.
4. Provide all PARCS and operating system software patches and updates free of charge during the warranty period; however, the Owner reserves the option of implementing the updates or not. Provide documentation seven calendar days prior to all PARCS and operating system software modifications, patches, and updates that describes:
 - a. patch/update release designation
 - b. proposed date and time of implementation
 - c. detailed description of what the patch/update accomplishes
 - d. full disaster recovery procedures that return the system to its pre-patch/update condition
5. Coordinate the testing and implementation of all patches and updates with the Owner. PARCS Database and PARCS application software maintenance to be performed remotely or on-site as approved by the Owner.
6. Support upgrades to the PARCS application based on operating system patch and upgrade requirements. (For example, if the PARCS runs on a Microsoft operating system, patch the PARCS software according to the Microsoft patch and update schedule without breaking any application. If Microsoft decommissions an operating system, the Contractor must be capable of releasing code compatible with next operating system upgrade prior to Microsoft ending support for current operating system.)
7. Provide corrective patches and updates in the event security vulnerability or system availability issues are discovered.

1.12 POST-WARRANTY MAINTENANCE SERVICES AND SUPPORT (ADD/ALTERNATE)

- A. Include proposed add/alternate costs in the proposal to provide post-warranty maintenance services for the PARCS on an annual basis for a total of five (5) years following expiration of the warranty period with pricing valid for the Owner to purchase the Post-Warranty Maintenance Services through a service agreement between the Owner and Contractor.
- B. Propose a scope of work to provide post-warranty maintenance services and support as outlined in the Warranty Section 1.10, including:
 1. Remote software support for PARCS software and all 3rd party software applications
 2. 24/7 hotline telephone hardware and software support
 3. PARCS and 3rd party software patches and updates
 4. Remote maintenance support for all PARCS components
 5. On-call, on-site emergency maintenance support
 6. Minimum Quarterly Preventive maintenance services in accordance with the PARCS maintenance procedures manual
- C. Provide separate line item cost as part of the post-warranty maintenance proposal to repair or replace any defective PARCS components at no additional cost to Owner. This excludes components damaged or rendered unserviceable due to Acts of God, or apparent and provable misuse, abuse, vandalism or negligence by Owner or the using public.

PART 2 - PRODUCTS

2.1 PAYMENT CARD

- A. Accept the following types of credit card payments:
 - 1. VISA
 - 2. Master Card
 - 3. American Express
 - 4. Discover
 - 5. Bank Debit Cards with Credit Card logo

- B. Accept the following Contactless card/NFC payments:
 - 1. VISA PayWave
 - 2. MasterCard PayPass
 - 3. AMEX ExpressPay
 - 4. Apple Pay
 - 5. Google Pay
 - 6. Samsung Pay

- C. Utilize credit and debit card acceptance hardware, software, and other system components that are PCI-DSS and PCI-P2PE compliant.
 - 1. PCI-DSS compliant Systems: For all devices and systems that are in scope of PCI-DSS compliance as defined within the latest version of PCI-DSS, provide verifiable proof that all such devices are either:
 - a. A currently validated PA-DSS Application, suitable for new installations, as listed on the [PCI-DSS website](#).
 - b. Part of a Level-1 Audited Service Provider payment system. Suitable proof must be a listing on the VISA or MasterCard Service Provider web site, or an audited and signed Attestation of Compliance (AOC) showing a successful Service Provider Audit performed by a Qualified Security Assessor (QSA)
 - 2. All devices that accept a payment card must accommodate PCI P2PE EMV payments. Devices that are not EMV ready will not be accepted:
 - a. Device is fully ready to accept PCI P2PE EMV payments and will operate in mag-stripe mode until upgraded to chip mode.
 - b. Provide a list of all available options for Payment Processors and Gateways that may be selected to support PCI-P2PE processing.
 - 3. Card-Present Transactions
 - a. Must be a PCI P2PE certified solution.
 - b. For contact-read transactions, must be capable of reading both mag and chip credentials.
 - c. For contact-read transactions that are attended by a cashier, a PIN pad must be included; unattended transaction devices do not require a PIN pad.
 - d. For contactless transactions, must be capable of accepting Apple Pay and Google Pay transactions.
 - 4. Card-not-present Transactions
 - a. Must be part of a PA-DSS - certified payment application that is listed as acceptable for new deployments.
 - b. Must utilize tokenization such that no cardholder data is stored on the PARCS system. This requirement is intended to exclude all such data – even if it were to be compliantly encrypted.
 - 5. Certifications of PA-DSS and/or PCI-P2PE status that are expected at a future date are not acceptable.

2.2 SOFTWARE

- A. Provide all software and software licensing required by the system.

- B. Utilize proven, off-the-shelf software (i.e., software already manufactured and available for delivery) to the greatest extent possible.

- C. Unless specified elsewhere, provide the latest available software version at the time of system implementation for all third-party software.
- D. Make any necessary modifications, and provide documentation of such modifications, to existing third party software programs that the Contractor adopts for the system. Should the Contractor and the software manufacturer be separate entities, the software modifications will not preclude the purchase of a standard maintenance and service contract from the manufacturer.
- E. Purchase software maintenance for all third-party software naming the Owner as the software Owner and contact. Provide maintenance agreements throughout the duration of the warranty period.
- F. Provide any necessary perpetual licenses and/or authorization for all PARCS related software including, but not limited to, operating systems, application software, development language, peripheral software, and PARCS hardware diagnostic software. If available, provide a site license to the Owner, meaning usage of the license is unrestricted, regardless of the physical locations where the software may be used.
- G. Provide licenses that cover future updates as required by these specifications.
- H. Deliver any available original ISO, USB Stick, DVDs/software or product keys and software license documentation with Owner listed prior to commencing system testing.
- I. Database Management System
 - 1. Provide application software consisting of software to provide complete operation of the PARCS and include the database management system.
 - 2. Maintain data recorded by the PARCS in files that are in ODBC compatible formats.
- J. Operating System Platform
 - 1. Operating system software consisting of software to support system setup, system operation, routine hard drive backups, diagnostics, and other maintenance routines.
 - 2. Upgrade the PARCS application to operate on the most current operating system upon commercial release of a new operating system version. Upon completion of successful Contractor testing, recommend implementation of the patch. Implementation subject to the Owner's approval.
- K. PARCS Application Software:
 - 1. Install and configure all application software and firmware required by the PARCS with all software licenses registered to the Owner.
 - 2. Provides complete operation of the PARCS and includes the database management system.
 - 3. Allows for future upgrade and expansion of the PARCS.
 - 4. PA DSS validated as per PCI website for new deployments according to current PCI requirements.
 - 5. Upgradable to maintain current PCI standards throughout the life of the system.
 - 6. Browser-based and web-browser enabled such that the PARCS is accessible from any Owner workstation connected to their network.
 - 7. Operates across dedicated PARCS Local Area Network (LAN), accessible with proper user ID and password, on all workstations authorized to access the PARCS software modules.
 - 8. Allow multiple groups and roles that govern individual access to the system. The assignment of a group/role will control access to the various modules of the PARCS, and if the access is update or view only.
 - 9. Access rights to the system for the various groups and roles will be defined during implementation.
 - 10. PARCS application software to provide the following:
 - a. Manage, display, and report all PARCS-related activity as outlined in this functional specification.

- b. GUI that is intuitive and user friendly.
- c. Automatic detection and reporting of fault conditions and equipment failures. Categorize fault condition by severity and display alarm notification on the system GUI as well as notify designated Owner personnel via email and/or text message for any individual fault condition, category of fault, or Owner-selected group of faults.
- d. Reporting as outlined in the Reporting section.
- e. Facilities monitoring of all PARCS field devices
- f. Central access and control of field devices for users with the appropriate authorization to issue remote commands from system workstations to the field devices such as raising and lowering the BG; rebooting field devices; putting field devices in or out of service; remote transaction processing using LPR; etc.
- g. Audit trail for the use of central controls within the PARCS database by user ID, time, controlled device and action taken.
- h. Configurable parking rates, grace periods, and time increment changes from system workstations. Configuration access to be restricted to Owner designated users with proper authorization.
- i. Audit trail for all parking rate, grace period and time increment changes
- j. Remote communication with all devices in real-time for a general broadcast of information (e.g. rate changes or time increment changes) or software update and an ability to communicate to a single device to upload information or software. It shall be possible to remotely shutdown a field device's operating system, upload updates and remotely restart the field device.
- k. Correct calculation and processing of parking fees during a transition:
 - 1) from daylight savings time to standard time, and vice versa
 - 2) at the beginning of March during leap years (e.g., when there is a February 29th).
 - 3) from one rate to another (e.g., rate has an effective date so that Customers are charged a parking fee based upon the parking fee that was current at the entry date and time, not the exit date and time, allow the new rate to be either less than or greater than the new rate).
- l. Programmable rate structure to establish variable rates based upon the time of day, day of week, and special events.
- m. Programmable rate structure to establish daily/weekly/monthly maximum fees, grace times, and complimentary periods.
- n. Programmable rate structure to allow configuration of the tax rate applied to parking fees.
- o. Create system generated alarms – generation of alarms for user selectable event type. Alarm Hierarchy shall be completely configurable so the Owner can adjust priority of alarms, audible tones, where the alarms are sent, etc. Initial Alarm Hierarchy shall be coordinated with the Owner during implementation.
- p. Ability to export all query results and reports to multiple formats including Portable Document Format (PDF), comma-separated-value, and Microsoft Excel®.

L. Reporting

- 1. Available online and on demand for Owner personnel who have proper password access.
- 2. Viewable, printable, and exportable from the GUI.
 - a. Ability to export all query results and reports to multiple formats including Portable Document Format (PDF), comma-separated-value, and Microsoft Excel®.
- 3. Data compiled in an ODBC compliant database with the ability to prepare custom reports using the PARCS data including Microsoft Excel, at a minimum, via a comma-separated-value file format.
- 4. Provide the Contractor's PARCS standard reports including report descriptions, selectable data fields, and report layouts for all standard reports.
- 5. Coordinate with the Owner as required during the system design to address specific reporting needs of the Owner. At a minimum, reports provided shall include:

- a. Detailed Revenue and Non-Revenue Transactions Reports – Reports of transactions processed through the PARCS by user selectable parameters including user type (ticketed customer, validation, pre-paid, parking integrator, Access Credential, etc.), date/time range, and by PARCS device.
- b. Detailed and Summary Revenue Reports for daily, weekly, and monthly PARCS activity sortable by cashier shift and device.
- c. Duration of stay report – Report sortable by user type with the ability to breakdown by 30-minute intervals.
- d. Payment Card Reports – Reports of credit card transactions by user selectable parameters including date/time range, credit card type, transactions type (valid online transaction, declined transactions, offline transactions, etc.)
- e. Outstanding Ticket Reports – Report of parking tickets that have been issued but have not been processed or exited from the system.
- f. Validation Report – Report of validations issued, amount of validations, and when the validation was used, by user selectable parameters.
- g. System Event Reports – Reports for system generated events by user selectable parameters including PARCS device and date/time range.
- h. Occupancy Reports– Report of occupancy sortable by user type, facility, section, nested area, entry lane, exit lane, on a minimum of hourly basis.
- i. Contract card reports – Reports of contract cards active, expired, including entry/exit status, pass-back violations, and duration of stay.
- j. Exception report – Report of system exceptions sortable by ticket type, exception type, facility, lane, and date/time.
- k. Ticket search report – Provide complete sequence of transactions related to individual tickets (i.e., information about how and when a ticket was issued, payment time and location, rate structure, payment method, etc.).

2.3 POWER

- A. Reference Drawings.
- B. Examine and accept power to the field locations. Should the proposed system require additional power infrastructure, the Contractor must identify location(s) in their proposal and provide cost for installing the required power infrastructure.
- C. Furnish and install all additional power conduits, pull cords, junction boxes, and cabling necessary to support the PARCS, per the PARCS manufacturer’s requirements.
- D. Provide and install any power grounding and power conditioning that is required for the operation of the system.
- E. The Contractor is responsible for furnishing, installing, terminating and testing any cable necessary to provide power from the local power source to the field devices.

2.4 COMMUNICATIONS

- A. Reference Drawings
- B. Data conduits provided from PARCS Server Room to various locations in/near each equipment island or plaza per owner. See drawings.
- C. Provide and install all communication cabling between the IDF termination location and PARCS equipment.
- D. Use fiber optic communications wiring for all Ethernet runs longer than 300 feet in accordance with the following:

1. Include pull boxes as shown on the drawings or per industry standards.
 2. Provide a detailed parts list showing number and manufacturer, for all fiber backbone material. (F/O cable, Terminators, Patch Panels, Fiber Duplex Patch Cords, etc.)
 3. Label all F/O components as per TIA/EIA-606. (Cables, Connectors, Hub facilities, Termination facilities, Conduits, and Pathways). All Drops are to be labeled.
 4. Do not exceed minimum bend radius for all F/O cable.
 5. Do not exceed allowable tensile rating for F/O cable during installation. If a winch or pulling machine is used, a dynamometer must be used to monitor tension.
 6. F/O testing and certification of all runs is a requirement, per industry standards. Written test results of each test must be submitted to Owner or Owner's representative for review.
- E. Provide and install all additional communication equipment, conduits, pull cords, junction boxes, and cabling necessary to support the PARCS, per the PARCS manufacturer's specifications.
- F. Provide and install all other communication switches, communication enclosures, and cabling at each lane to provide full PARCS system functionality.
- G. Every PARCS device and system component must operate independently in the event of a network communications failure or interruption. Each device requires buffering of data for a minimum of 2,000 transactions. System will continue to operate in the off-line mode and store the buffered data until the data connection is restored. Upon restoration of the data connection, all stored data will automatically be uploaded to the server or cloud. In the event some transactions are not successfully uploaded, send an alert, and continue to store the transactions locally until successful uploading has occurred.

2.5 EQUIPMENT AND SUBSYSTEMS

- A. General
1. Provide newly manufactured equipment and associated materials for the PARCS.
 2. All equipment performing a like function and of the same part number are to be fully interchangeable without the requirement for physical modifications.
- B. Computer System, Application, and Data Servers:
1. Virtual Server Environment(s) will be provided by ROA.
 2. Contractor may provide a Cloud Based solution instead of on-site solution.
 - a. Provide SaaS fees for Cloud-Based solution for a full six (6) years; pricing to be valid in year of contract anniversary.
 3. Review drawings for locations and Coordinate space needs with Owner as necessary.
 4. Provide all equipment with sufficient processing power, memory capacity, and communication bandwidth to meet functional performance demands of PARCS software without loss of responsiveness to user input or slowing of any end node device or workstation.
 5. Ability to operate in a virtual environment.
 6. Utilize TCP/IP for data communication.
 7. Provide centralized management of the PARCS.
 8. PARCS server(s) to contain all PARCS application and database software that is associated with PARCS operation, data storage, and reports.
 9. Install and configure all necessary software on the server(s) with all required system software licenses registered to the Owner.
 10. Configure such that the following features and functionalities are attainable:
 - a. Maintain 24 months of on-line data of all PARCS data, except for LPR data that is to be stored for 150 days. All data shall be readily accessible without any delay in processing.

- b. Provide fault tolerance such that no server-level single point of failure causes disruption to the PARCS or corruption of PARCS data such as a RAID configuration.

C. Intercom Subsystem

1. Provide and install a video intercom system for two-way communication and one-way video between the PARCS field devices at all entry and exit lanes and POF stations, to a centralized location designated by the Owner.
2. Fully digital, microprocessor based, modular design utilizing VoIP (Voice over Internet Protocol)
3. Programming server for all intercom features performed through networked workstation or from intercom master station.
4. Programmed configuration of intercom stations and system features stored in non-volatile memory.
5. System includes all software and hardware required for programming system, including:
 - a. Individually programmable volume control for each intercom station.
 - b. Substations programmed to call intercom master station.
 - c. Call forwarding feature for individual stations or all stations to re-direct calls to another designated master station or designated remote monitoring service.
6. Master station desktop model with full color LED display and noise cancelling microphone designed for high-noise environment. Required features:
 - a. Provide full-duplex hands-free conversation with any other selected individual station or combination of stations in system.
 - b. Integrated amplifier and loudspeaker.
 - c. Firmware/feature upgrades available via download through intercom server with no local modification on station required.
 - d. High-sensitivity microphone to provide clear conversation from a minimum range of 5 ft.
 - e. Intercom station directory panel with direct access, pre-programmable function menus, selectable language, and adjustable display contrast.
 - f. "Handset function" enabling user to switch from loud-speaking microphone operation to handset mode.
7. PARCS field device intercom substation requirements:
 - a. Provide push button intercoms at all entry lanes, exit lanes, and Pay-On-Foots.
 - b. Integrated pinhole camera activated when intercom engaged. One-way video feed automatically available and displayed when the intercom call is acknowledged.
 - c. Microphone, loudspeaker, and in-use LED all housed in one unit with configurable front pushbutton control.
 - d. DSP technology to provide full speaker/microphone supervision and fully adjustable (volume/timing threshold programmable via intercom server) audio monitoring.

D. Entry Stations (ENS)

1. Provide and install ENS) at the public entry lanes, as indicated on the Drawings, equipped with the following components and capabilities:
 - a. Push button ticket dispenser (TD)
 - b. Proximity Card Reader with a minimum read range of four (4) inches integrated into the face of the ENS
 - c. 2D Barcode reader integrated into the face of the ENS capable of reading 1D, 2D, and QR barcodes including pre-printed coupons/validations and electronic barcodes displayed on mobile devices.

- d. Push button video intercom integrated into the face of the ENS
 - e. Issues one time and date stamped barcode parking ticket for each ticketed entry transaction
 - f. Uniquely encoded tickets
 - g. Unique ENS identifier encoded and printed on each ticket
 - h. Machine readable ticket encoding that is compatible with all other PARCS components
 - i. Minimum ticket stock capacity of 5,000 tickets
 - j. Retraction bin for retaining retracted tickets
 - k. Color touch-screen with minimum 5" display capable of displaying customized videos.
 - l. Provide selectable directional language, for a minimum of English and Spanish
 - m. Stand-alone functionality that allows the ENS to operate independently when there is a temporary network communication failure, regardless of where the communication interruption occurs. Alarm for ENS offline condition to be displayed on the PARCS GUI.
 - n. Ticket stock low alarm generated on the PARCS GUI
 - o. Ticket stock out alarm generated on the PARCS GUI
 - p. Interfaces with other PARCS equipment in the respective lanes such as barrier gate, card reader, and LPR system (if selected)
2. Entry Procedures: See LPR subsection for additional information
- a. Normal Entry – Ticket Issuing
 - 1) Upon activation of the vehicle detector, ENS is armed and displays instructions to “push button for ticket”, or another Owner approved message.
 - 2) After button is pushed, the parking ticket is issued within 3 seconds
 - 3) After customer removes the ticket the ENS sends a signal to the barrier gate and the barrier gate rises.
 - 4) After vehicle crosses over the closing vehicle detection loop the gate closes, and the transaction data is sent to the PARCS server.
 - 5) The barrier gate’s mechanical counter increments by a count of one.
 - b. Normal Entry – Barcode In
 - 1) Upon activation of the vehicle detector, ENS is armed and displays instructions to “push button for ticket”, or another Owner approved message.
 - 2) Customer presents valid barcode (either on smart phone or printed) allowing pre-authorized entry to parking and the ENS verifies that it is a valid barcode.
 - 3) After barcode is verified the ENS sends a signal to the barrier gate and the barrier gate rises.
 - 4) After vehicle crosses over the closing vehicle detection loop the gate closes, and the transaction data is sent to the PARCS server.
 - 5) The barrier gate’s mechanical counter increments by a count of one.
 - c. Back-out Ticket Taken
 - 1) After ticket is taken by the customer and gate raises, the customer backs out of the entrance without entering the facility.
 - 2) Alarm is sent to the PARCS GUI and recorded in the PARCS database.
 - 3) Ticket is invalidated in the system.
 - 4) Gate automatically closes after a user configurable timeout.
 - d. Back-out Ticket Not Taken
 - 1) After ticket is issued but before it is taken by the customer, the customer backs out of the entry lane.
 - 2) Ticket is retracted by the ENS, invalidated in the PARCS, barcode is “X’d Out”, and placed in the ENS retraction bin.
 - e. Prox or AVI Back-out test

- 1) After activating the ENS with Prox or AVI Read and after the gate is raised, the customer backs out of the entry lane.
- 2) After barrier gate has closed, repeat the process.
- 3) Prox or AVI should again be accepted since the vehicle did not proceed through the barrier gate.

E. Exit Stations (EXS)

1. Provide Exit Stations (EXS) at the exit lanes, as indicated on the Drawings. Each EXS equipped with the following components and capabilities:
 - a. EMV credit card reader capable of reading mag-stripe, chip-based and contactless credit cards integrated into the face of the EXS.
 - b. Insert-style ticket verifier with printer to "X out" the barcode.
 - c. 2D Barcode reader integrated into the face of the EXS capable of reading 1D, 2D, and QR barcodes including reading pre-printed coupons/validations and electronic barcodes displayed on mobile devices.
 - d. Push button video intercom integrated into the face of the EXS
 - e. Unique EXS identifier encoded and printed on each ticket after processing
 - f. Machine readable ticket encoding that is compatible with all other PARCS components
 - g. Reads, verifies, and "X's out" pre-paid tickets
 - h. Reads, verifies, and "X's out" validated tickets.
 - i. Retraction bin for retaining retracted tickets.
 - 1) EXS Must be capable of retracting and retaining tickets. Do not submit proposal taking exception to this function.
 - j. Color touch-screen with minimum 5" display capable of displaying customized videos.
 - k. Provide selectable directional language, for a minimum of English and Spanish
 - l. Stand-alone functionality that allows the EXS to operate independently when there is a temporary network communication failure, regardless of where the communication interruption occurs. Alarm for EXS offline condition to be displayed on the PARCS GUI.
 - m. Receipt printer that can produce receipts for all transactions.
 - 1) Upon successful payment, print a receipt that includes:
 - a) Owner approved header
 - b) Facility Name
 - c) Transaction number
 - d) Lane or equipment number
 - e) Rate code
 - f) Entry date/time and Exit date/time
 - g) Parking fee
 - h) Amount of tax for the parking fee (if applicable)
 - i) Other fees as applicable
 - j) Total fee paid
 - k) Payment type
 - l) Credit card type
 - m) Last 4 digits of credit card number
 - 2) User configurable for receipts to be auto issue or by request.
 - 3) Receipts to be FACTA-compliant.
 - n. Receipt stock low alarm generated on the PARCS GUI
 - o. Receipt stock out alarm generated on the PARCS GUI

- p. Interfaces with other PARCS equipment in the respective lanes such as barrier gate, card reader, and LPR system (if selected).
2. EXS Exit Procedures: See LPR subsection for additional information
- a. Normal Exit – Pre-paid Ticket
 - 1) Upon activation of the EXS vehicle detector, EXS is armed and displays instructions to “please insert ticket”, or another Owner approved message.
 - 2) After the pre-paid ticket is inserted, ticket information is verified, and the ticket is retracted into the retraction bin.
 - 3) After the ticket is retracted the EXS sends a signal to the barrier gate and the barrier gate rises.
 - 4) After vehicle crosses over the downstream vehicle detection device the gate closes, and the transaction data is sent to the PARCS server.
 - 5) The ticket is moved from active ticket inventory to inactive ticket inventory.
 - b. Normal Exit – Validated Ticket
 - 1) Upon activation of the EXS vehicle detector, EXS is armed and displays instructions to “please insert ticket”, or another Owner approved message.
 - 2) After the validated ticket is inserted, the validation is verified and the ticket is retracted into the retraction bin.
 - 3) After the ticket is retracted the EXS sends a signal to the barrier gate and the barrier gate rises.
 - 4) After vehicle crosses over the closing vehicle detection loop the gate closes and the transaction data is sent to the PARCS server.
 - 5) The barrier gate’s mechanical counter increments by a count of one.
 - 6) The ticket is moved from active ticket inventory to inactive ticket inventory.
 - c. Normal Exit – Unpaid Ticket
 - 1) Upon activation of the EXS vehicle detector, EXS is armed and displays instructions to “please insert ticket”, or another Owner approved message.
 - 2) After unpaid ticket is inserted, the EXS calculates the appropriate parking fee and displays the fee due with instructions to insert credit card.
 - 3) After customer inserts the credit card in the EMV reader, the PARCS performs credit card authorization and the EXS display shows the message “Processing”, or another Owner approved message.
 - 4) Once payment is obtained, the EXS displays instructions to remove credit card.
 - 5) Card is removed and the EXS produces a receipt.
 - 6) EXS displays instructions to remove receipt.
 - 7) After customer removes the receipt the EXS sends a signal to the barrier gate and the barrier gate rises.
 - 8) After vehicle crosses over the closing vehicle detection loop the gate closes and the transaction data is sent to the PARCS server.
 - 9) The barrier gate’s mechanical counter increments by a count of one.
 - 10) The ticket is moved from active ticket inventory to inactive ticket inventory.
 - d. Normal Exit – Barcode Out
 - 1) Upon activation of the vehicle detector, EXS is armed and displays instructions to “please insert ticket”, or another Owner approved message.
 - 2) Customer presents valid barcode (either on smart phone or printed) allowing pre-authorized exit to parking and the EXS verifies that it is a valid barcode.
 - 3) After barcode is verified the EXS sends a signal to the barrier gate and the barrier gate rises.

- 4) After vehicle crosses over the closing vehicle detection loop the gate closes, and the transaction data is sent to the PARCS server.
 - 5) The barrier gate's mechanical counter increments by a count of one.
 - e. Transaction specific procedures are required in addition to or in place of the normal transaction procedures above. The transaction specific exit procedures are detailed below:
 - f. Invalid Credit Card Presented for Payment
 - 1) After the parking fee is displayed, an invalid credit card is presented, and the display shows the fee due and the appropriate message while processing.
 - 2) Once authorization is declined, the credit card is returned and the message "Card Not Accepted", or another Owner approved message, is displayed along with the fee due.
 - 3) Once the customer presents a valid credit card for payment, the transaction continues as a normal exit transaction.
 - g. Exit Within Grace
 - 1) After inserting ticket, a zero-dollar fee is displayed on the customer fee display, the barrier gate rises, and the transaction continues as a normal exit transaction.
 - h. Lost Ticket Transaction
 - 1) The customer pushes the intercom button and informs the operator that they have lost their ticket.
 - 2) The operator determines the length of stay by verifying travel itinerary and sends a lost ticket fee to the EXS.
 - 3) The transaction proceeds as a Credit Card exit transaction.
- F. Cashier Fee Computer (CFC)
1. All cashiered lanes to be "dual use" such that they can operate in a cashiered mode through the CFC when a cashier is present or in an un-manned mode through the EXS when a cashier is not present.
 2. Provide CFCs, as indicated on the Drawings, in cashier booths with the following components and capabilities:
 - a. Cashier computer with integrated EMV credit card functionality
 - a) EMV Ready credit card reader capable of reading mag-stripe, chip based, and contactless credit cards.
 - b) PIN pad for customer use for PIN-based transactions
 - b. Ticket reader/validator that accepts ISO standard readable cards, barcode parking tickets, and validations
 - c. Hand-held Barcode/QR reader capable of reaching out to scan customer provided ticket or mobile device.
 - d. Cashier monitor (minimum 20") with standard mouse and QWERTY keyboard.
 - e. Capability to process all acceptable payment methods
 - f. Capability of "split payment" i.e. \$XX.XX in Cash with remainder due on Credit Card.
 - g. Receipt printer that can produce receipts for all transactions. Duplicate receipt function shall be a user selectable feature that can be disabled if desired.
 - 1) Upon successful payment, print a receipt that includes:
 - a) Owner approved header
 - b) Facility Name
 - c) Attendant name or number
 - d) Transaction number
 - e) Lane or machine number
 - f) Rate code
 - g) Discounts or surcharges

- h) Entry date/time and Exit date/time
 - i) Duration of stay
 - j) Parking fee
 - k) Amount of tax for the parking fee
 - l) Total fee paid
 - m) Payment type – cash or credit
 - n) Credit card type, if paying with credit card
 - o) Last 4 digits of credit card number, if paying with credit card
 - 2) User configurable for receipts to be auto issue or by request.
 - 3) Receipts to be FACTA-compliant.
- h. Customer fee displays that are easy to read, LED type
- i. Dual cash drawer operation with removable, lockable inserts.
- j. Cashier drawer only opens for those transactions that require cashier intervention (e.g. cash transactions). For those transactions that do not require cashier intervention (e.g. credit card transaction, grace ticket, full validation transaction, etc.) the cashier drawer remains closed.
- k. Stand-alone functionality that allows the CT to operate independently when there is a temporary network communication failure, regardless of where the communication interruption occurs. Alarm for CFC offline condition to be displayed on the PARCS GUI.
- l. Provide offline transaction storage capacity for all transactional information, including storing encrypted credit card data, for a minimum of 1,000 transactions. Automatically close the cashiered lane if the transaction threshold is reached and remain closed until reestablishment of communications. CFC will automatically upload all transaction information to the PARCS servers once communication is restored.
- m. Journal tape printer for each CFC that is capable of printing out transactional information for each transaction processed at the device from a system workstation. Transactional information on the journal tape includes:
- 1) Date and time of transaction
 - 2) PARCS device number
 - 3) Sequential transaction number
 - 4) Ticket number
 - 5) Entry date/time and exit date/time
 - 6) Parking fee
 - 7) Tax amount
 - 8) Total Fee
 - 9) Cash given, if cash was used
 - 10) Change given, if cash was used
 - 11) Credit card type, if credit card was used
 - 12) Last 4 digits of the credit card, if credit card was used
 - 13) Credit card authorization code, if credit card was used
3. CFC Operational Description
- a. CFC is not active without a vehicle detected on Presence/Activation loop
 - b. CFC is activated upon detection of vehicle on Presence/Activation loop.
 - c. CFC is disabled by detection of an ACS credential, and the insertion of a ticket disables the ACS reader.
 - d. Upon detection of a vehicle on the activation/presence loop, CFC will be activated and ready for a manual entry flat fee entry ticket.
 - e. Fully paid or validated tickets (prepaid reservations, Event Tickets, etc.) will be scanned by the bar/QR code scanner, and a signal will be sent to open gate and send data to FMS.
 - f. For tickets that are not fully paid/validated, display fee due to customer. Cashier provides cash or credit card is swiped and change (if required) is displayed and drawer opens.

- g. Upon payment of fee, send signal to open gate and send data to FMS.
- h. Exit ticket and receipt is generated. Exit ticket has predetermined exit time, and normal rates will apply if that time is exceeded. No receipt issued for zero fee transactions.

G. Cash and Credit Card Pay-on-Foot Station (CCC-POF)

1. Independently and in concert with FMS, read ticket data to determine ticket validity, payment due and any encoded validation.
2. Include the following integrated components:
 - a. Bill Acceptor/Recycler/Dispenser
 - b. EMV credit card reader capable of reading mag-stripe, chip-based and contactless credit cards.
 - c. Barcode/QR reader.
 - d. Receipt Printer.
 - e. Processed ticket vault.
 - f. Easily readable display screen with message such as "Please Insert Ticket".
 - g. Visual instructions displayed to patrons.
 - h. Intercom with push-button, speaker, and microphone.
3. If payment is due, display amount due and request payment via cash or credit card.
 - a. Accept U.S. paper money in any combination of one, five, ten, and twenty dollar denominations.
 - b. Include a separate safe or vault in banknote acceptor.
 - c. Dispense change in highest denominations possible.
4. Upon receipt of payment, issue machine encoded ticket, with programmable elapsed grace period.
5. Provide concise instruction with pictograms where appropriate for user-friendly operation.
6. Provide clear instructions to patron throughout transaction process.
7. Include high security lock system with appropriate alarm contacts for tampering.
8. Capable of maintaining a minimum processing rate, including typical patron delays, of 100 transactions per hour.
9. Operational Description
 - a. Patron inserts ticket into POF.
 - b. For valid tickets, fee is displayed. Patron inserts cash or credit card and payment is processed. Change is returned to patron if needed, or credit card transaction is processed.
 - c. Amount paid, transaction number and other data are printed on ticket in readable form and encoded on ticket. All data is sent to FMS.
 - d. Patron is advised visually to take ticket and proceed to vehicular exit.
 - e. Receipts are issued only upon patron request for all fee paid transactions (Programmable for auto-receipt by FMS). No receipt issued for zero fee transactions.
 - f. If POF cannot read ticket or it is otherwise identified as voided; ticket is returned to patron, and a visual message advises patron that transaction cannot be processed and to press intercom for assistance.

H. Credit Card Pay-on-Foot Station (CC-POF)

1. Independently and in concert with FMS, read ticket data to determine ticket validity, payment due, and any encoded validation.
2. Include the following integrated components:
 - a. EMV credit card reader capable of reading mag-stripe, chip-based and contactless credit cards.
 - b. Barcode/QR reader.
 - c. Receipt Printer.
 - d. Processed ticket vault.
 - e. Easily readable display screen with message such as "Please Insert Ticket".
 - f. Visual instructions displayed to patrons.
 - g. Intercom with push-button, speaker, and microphone.
3. If payment is due, display amount due and request payment via credit card.
4. Upon receipt of payment, issue machine encoded ticket, with programmable elapsed grace period.

5. Provide concise instruction with pictograms where appropriate for user-friendly operation.
6. Provide clear instructions to patron throughout transaction process.
7. Include high security lock system with appropriate alarm contacts for tampering.
8. Capable of maintaining a minimum processing rate, including typical patron delays, of 100 transactions per hour.
9. Operational Description
 - a. Patron inserts ticket into POF.
 - b. For valid tickets, fee is displayed. Patron inserts credit card and payment is processed.
 - c. Amount paid, transaction number and other data are printed on ticket in readable form and encoded on ticket. All data is sent to FMS.
 - d. Patron is advised visually to take ticket and proceed to vehicular exit.
 - e. Receipts are issued only upon patron request for all fee paid transactions (Programmable for auto-receipt by FMS). No receipt issued for zero fee transactions.
 - f. If POF cannot read ticket or it is otherwise identified as voided; ticket is returned to patron, and a visual message advises patron that transaction cannot be processed and to press intercom for assistance.

I. Barrier Gates (BG)

1. Provide and install Barrier Gates (BG) at all entry and exit lanes as indicated on the Drawings.
2. All gates referenced in this specification section shall contain the following:
 - a. Non-wood gate arm; bottom of arm padded
 - b. Typical gate arm and length of 10 feet, determined by lane.
 - c. Single piece gate arm or articulated as required by height limitations
3. BG shall have enough power/resistance to ensure they cannot manually be forced open.
4. Gate controllers with the following features and functionalities:
 - a. Microprocessor controlled and communication of gate status and functions to the PARCS workstations.
 - b. Directional logic with electronic outputs to alarms, to report atypical lane activity to PARCS.
 - c. Ability to test gate operability and controller programming on-site without use of special diagnostic equipment.
 - d. "AUTO-MANUAL" switch, and "ON-OFF" switch for gate.
 - e. Contains power supplies, dust-proof relays, and other circuit components to control gate.
 - f. Receive inputs from the other PARCS equipment in the respective lanes such as, ENS, EXS, and LPR system (if selected) and open after receiving the appropriate signal and close after the vehicle passes over the closing loop.
 - g. Receive commands from the PARCS workstations for remote opening and closing of the BG.

J. Vehicle Detection Devices

1. Each public entry and exit lane contain two or three vehicle detection loops.
2. Loop detectors shall be dual channel detectors. New loop detectors are to be provided in each lane, regardless of the condition of the existing loop.
3. Provide two channel pulse and presence outputs.
4. Provide separate, momentary contact closures upon detection of a vehicle, along with continuous contact closures during the period that the vehicle is detected.
5. Loop detectors shall contain two fully separate, self-tuning, vehicle loop detectors and directional logic circuitry.
6. Incorporate a sensitive tailgate recognition system capable of resolving two automobiles within six inches of each other on a standard 2.5 ft x 6 ft loop.

7. Loop detectors shall each have adjustable sensitivity modes.
8. Different sensitivity settings shall allow vehicles of varying height and size to be properly detected.
9. Loop detectors shall be fully microprocessor-based.
10. Loop detectors shall generate two loop frequencies. No two frequencies shall be the same to minimize the possibility of detector crosstalk or interference between two detector loops mounted within close proximity. Detectors generating an identical frequency are unacceptable.

K. Inductive Loops

1. Cut-into paving surface and filled with manufacturer's approved sealant.
 - a. Loops being cut into pre-cast concrete shall have GPR performed to identify constraints.
2. Be formed by three to four turns of 20-gauge/16-gauge XLPE single-conductor wire.
3. No splices are permitted.
4. Contain loop leads:
 - a. Limited to a length of 50 feet.
 - b. Have a four-twist minimum per foot and located at a minimum of 18 inches from electrical power lines.
 - c. Be contained in separate conduit to prevent interference from electrical signals.
 - d. Light in color (White, Red, or Orange) for presence loop
 - e. Dark in color (Black, Blue, or Green) for safety loop
 - f. Light in color (White, Red, or Orange) for secondary presence loop (if applicable)
 - g. Dark in color (Black, Blue, or Green) for down-stream loop (if applicable)
5. 20-gauge XLPE single conductor wire:
 - a. #20 AWG multi-strand copper wire
 - b. 0.040" Nominal XLPE (cross-linked polyethylene) Insulation
 - c. 0.120 Nominal O.D. for use in 1/8" saw cuts
 - d. Only used in Concrete drive lanes
6. 16-gauge XLPE single conductor wire:
 - a. #16 AWG multi-strand copper wire
 - b. .080" Nominal XLPE (cross-linked polyethylene) Insulation
 - c. 0.220" Nominal O.D. for use in 1/4" saw cuts
 - d. Used in Concrete or Asphalt drive lanes
7. Backer Rod:
 - a. Closed cell polyethylene foam
 - b. Installed prior to sealing saw cuts
 - c. Holds loop wires and lead-in wire securely in saw cuts
 - d. Prevents wires from floating to surface when sealant is applied
 - e. Use 2" piece in at least every 2' of saw cut
 - f. Used in concrete or asphalt
 - g. 0.375" Nominal O.D. for use in 1/8" saw cut
 - h. 0.500" Nominal O.D. for use in 1/4" saw cut
8. Products' Vendors: Subject to compliance with requirements, vendors whose products may be incorporated into the Work include, but are not limited to the following:
 - a. Reno A&E, 4655 Aircenter Circle, Reno, NV 89502
 - b. National Loop Company, 70 Cohoes Avenue, Green Island, NY 12183
 - c. Interstate Wire Co., 10355 Sanden Dr., Dallas, TX 75238
 - d. RAI Products, 421 Rountree Rd. Charlotte, NC 28217

L. LPR Subsystem (ADD ALTERNATE)

1. Furnish and install LPR at all entry, exit, and nesting lanes.
2. Throughout this Section, the term "LPR database" refers to a generic database(s) that may be housed entirely or in part on the PARCS central databases or on the LPR Subsystem hardware.

3. The LPR Subsystem consists of all hardware and software necessary to provide a complete and functional LPR subsystem that achieves the Owner's required functionality and accuracy, and that does not adversely affect any function of the PARCS.
4. Provide an LPR subsystem that is fully interfaced and integrated into the PARCS, including tying the LPN captured at entry to the unique ticket identification for every transaction. Should the entry information need to be obtained at an exit station to process the transaction (i.e. lost ticket, unreadable, etc.), both the LPN and ticket shall be removed from their respective active inventories once the vehicle has exited. Maintain LPR images and LPN in the database for a specified period of days (such as 150 days) at which point the LPR image and LPN is purged from the database while all other data associated with the transaction remains intact.
5. LPR system will be multi-functional and integrated as a primary credential in the PARCS. Functions include access credential for monthly contract parkers, access credential for pre-paid reservation system, additional credential for transient parkers.
 - a. Monthly contract parkers can enter multiple LPNs (one for each car they may drive, i.e. spouse, second, or rental car) as their access credential with prox card backup.
 - 1) As the monthly customer approaches the entry/exit lane, the LPR system recognizes their LPN, verifies the credential, and opens the barrier gate. If LPN is unrecognizable, the monthly customer presents their prox card to gain entry/exit.
 - 2) Only one (1) credential will be allowed access to the facility at a single time. I.e. if "BOB1" enters, "BOB2" will be flagged as an Anti-Passback transaction and will be denied entry.
 - b. Pre-Paid Reservation customers can enter their LPN when making the reservation. The LPN will be their primary credential with the mobile or printed QR/barcode as their backup.
 - 1) As the reservation customer approaches the entry/exit lane, the LPR system recognizes their LPN, verifies the reservation, and opens the barrier gate. If LPN is unrecognizable, the reservation customer presents their barcode to gain entry/exit.
 - 2) Only one (1) credential will be allowed access to the facility at a single time. I.e. if "BOB1" enters, "BOB2" will be flagged as an Anti-Passback transaction and will be denied entry.
 - c. Transient customer's ticket will be automatically associated with the LPN captured at entry to the facility.
 - 1) As the transient customer approaches the entry, the LPR system processes the LPN and associates with the ticket transaction used to enter the facility.
 - 2) As the transient customer approaches the exit, the LPR system recognizes the LPN. If the ticket has been processed for payment at the POF, has been fully validated, or is within the pre-programmed grace period, the barrier will raise, and the transient does not need to stop and enter their ticket into the EXS.
 - 3) If the LPN is recognized as requiring a fee, or is unrecognizable, the transient customer proceeds to enter their ticket into the EXS and the transaction is processed as a normal CC exit.
 - 4) If a discrepancy is found an alarm can be generated at the IRW and the transaction will be processed through the IRW function.
6. Processor and system Software
 - a. Automatically capture, interpret, process, display and store license plate images
 - b. Unlimited storage capacity.
 - c. "Fuzzy logic" plate matching capability.
 - d. Provide real-time displays of:
 - 1) License plate image.
 - 2) License plate character data.
 - 3) Image of vehicle.
 - 4) Date and time.
 - e. Ability to automatically identify misread plates.
 - f. Ability to add notes to images.

- g. Ability to manually enter plates for querying purposes.
- h. Ability to cross-link, query and input data from external sources.
- i. Ability to audit all queries by date, time, and user password.
- j. Ability to save frequent query requests.
- k. Data format in either .csv or text file.
- l. Ability to export and print all data.
- m. Provide audio and visual alerts.

7. LPR Image Review Workstations (IRW)

- a. IRW LPR software to be installed by the Contractor on PARCS Workstation.
- b. Provide an operator with the ability to review and correct LPR data and manage LPR exception transactions at the exits.
- c. Provide user configurable threshold that determines when reviews are sent to the IRW.
- d. Capability of reviewing and correcting entry images after the fact; that is after the vehicle has entered the parking facility. No time limit shall be stipulated for after the fact entry lane LPN correction, therefore, entry lane corrections can be made during off-peak transaction processing time.
- e. Images requiring review at exit will be given a programmable amount of time to process, with the initial limit set to 30 seconds. If the exception transaction has not been resolved during this programmable amount of time the transaction will process based on the LPN present in the lane. A report will be maintained of the number of non-matching plates allowed to exit without processing.
- f. Provide remote processing of exception transactions (e.g. Lost Ticket, Mutilated, Unreadable, etc.) by authorized users from any IRW. The authorized user shall have the ability to use the LPR data sent from the lane to the IRW to verify entry information and transmit the entry information to the exit station for automated calculation of the appropriate parking fee.
- g. Remote processing of exception transactions shall be a very efficient process with no more than three (3) clicks of the mouse.

8. LPR Cameras

- a. Furnish and install image capture cameras including any lights or shade canopies necessary at all entry and exit lanes to provide system functionality in all light and weather conditions.
 - 1) Perform all optical character recognition.
 - 2) RF shielded camera cables.
 - 3) Internal heating elements.
 - 4) Rated at 30 frames per second.
 - 5) Equipped with IR lens for license plate image
 - 6) Equipped with color lens for overall image for verification
 - 7) Capable of multiple images with multiple flash and shutter settings.
 - 8) Pulsed LED illumination.
- b. Provide theft deterrent and vandal resistant housings that meet applicable code requirements for outdoor equipment.
- c. Determine the exact location of each device, subject to Owner approval.
- d. Entry and exit images to be pre-capture, meaning that the cameras are placed such that a vehicle's LPN is photographed before the parking credential has been issued or accepted by the entry/exit device.
- e. Provide both "white light" and "infrared" lenses and images.
- f. Provide protection for LPR cameras from passing vehicles.

9. LPR Subsystem Performance Requirements

- a. Acquire an image of a vehicle's entire license plate at a 99 percent (99%) rate for all non-exception vehicles as defined within this section. The intent of the 99% capture rate is to have a visual record of 99% of all non-exception license plates entering the facility.
 - b. Operate in N-0 mode; however, achieve an N-1 Factor rating of 96%, meaning that the LPR system reads a minimum of six (6) of seven (7) license plate characters correctly, ninety-six percent (96%) of the time for all non-exception vehicles as defined within this section. Missing, misread, or additional characters as determined by the LPR system, are counted against the read accuracy (i.e. if a license plate contains six standard characters "ABC123", then N=6. Therefore, in order for the system to achieve an N-0 read, the system reads "ABC123" exactly). Additional characters added before or after the license plate characters count against the read rate. (i.e., "1ABC123" does not constitute an N-0 read).
 - c. Exception vehicles will not count against the accuracy of the LPR Subsystem. For the purposes of the LPR performance requirements an exception vehicle is defined as:
 - 1) Any vehicle whose license plate is obstructed, obscured, or encroached upon by a foreign object.
 - 2) Oversized vehicles that have a total distance between the center of the drivers' side window and the end of the rear bumper greater than 15 feet.
 - 3) Vehicles that contain excessive graphics and advertising such that it is impossible for the LPR system to determine which graphics belong to the license plate and which graphics do not.
 - 4) Vehicles with no license plate.
 - 5) Vehicles with inadequately displayed license plate i.e. sitting on the ledge of the rear window.
 - 6) Vehicles with temporary cardboard "Dealer Plates."
 - d. Ambient lighting conditions shall have no effect on the accuracy of the LPR system regardless of the time of the day and night. Contractor to provide any necessary shading or lighting elements required to mitigate the effect of the ambient lighting conditions on the LPR system performance.
 - e. Provide a means, subject to approval by the Owner, to remotely score the LPR Subsystem to ensure it meets the performance requirements. Assist the Owner in transferring images from each lane to a storage format such as CD-ROM, DVD, memory stick, or uploaded to an FTP site that can then be viewed and scored on a standalone PC by the Owner or their designated representative. Owner shall be able to select any images stored on the LPR database for scoring purposes. The Contractor to provide all software needed to test the LPR Subsystem's performance. The software shall be downloadable to a standalone PC used for testing.
- M. Roving Cashier Function
1. Proximity card with pre-loaded cash value to allow roving cashier to assist patron in credit card only lane with only cash.
 2. Upon payment of cash for parking, proximity card will activate the gate with the parking fee deducted from the pre-loaded proximity card.
 3. System to track Pre-loaded card and produce an activity report to balance out the cashier at the end of the shift.
- N. Validations
1. Off or On-Line Machine-Readable Encoding Validation.
 - a. Ticket is inserted into a portable desktop device to add validation to ticket.
 - b. Device encodes ticket with validation and adds tracking information for billing and reporting purposes.
 - c. If On-Line device, the validation information is uploaded to the PARCS FMS Software.
- O. Integrated Signage
1. Traffic Controller Signs:

- a. Signs shall be direct view LED type TCL1818RG-175TS from Signal-Tech or engineer, architect, or owner approved equivalent.
 - b. Red "X" / Green Arrow LED signs to advise patron if lane is open.
 - c. Dual LEDs in green (arrow) and red (X).
 - d. Ceiling mounted where possible or as shown on drawings.
 - e. Activated automatically or manually via FMS.
2. Lot Full Sign
- a. Signs shall be direct view LED type TCL1818RG-175TS from Signal-Tech or engineer, architect, or owner approved equivalent.
 - b. Dual Message LED signs display "OPEN" or "FULL" message signs at Entry Lanes as shown on drawings.
 - c. Dual LED's in red ("FULL") and green ("OPEN") to indicate facility parking availability.
 - d. Controlled automatically by PARCS software or via manual override.
3. Credit Card / Open / Closed (Automated Exit Lane **without** POF)
- a. Signs shall be direct view LED type TCL1434RRG-D497 from Signal-Tech or engineer, architect, or owner approved equivalent
 - b. Triple Message LED signs display "CREDIT CARD", "OPEN" or "CLOSED" message signs at Exit Lanes as shown on drawings.
 - c. Dual LED's in red ("CLOSED") and green ("CREDIT CARD", "OPEN") to indicate Exit Lane status.
 - d. Controlled automatically by PARCS software or via manual override
4. Cashier / Credit Card Only / Closed (Dual Cashiered Automated Exit Lane **without** POF)
- a. Signs shall be direct view LED type TCL1426RRG-B415 from Signal-Tech or engineer, architect, or owner approved equivalent
 - b. Triple Message LED signs display "CASHIER", "CREDIT CARD ONLY", or "CLOSED" message signs at Exit Lanes as shown on drawings.
 - c. Dual LED's in red ("CLOSED") and green ("CASHIER", "CREDIT CARD ONLY") to indicate Exit Lane status.
 - d. Controlled automatically by PARCS software or via manual override
5. Paid Tickets or Credit Cards / Closed (Automated Exit Lane **with** POF)
- a. Signs shall be direct view LED type TCL1434GR-B641 from Signal-Tech or engineer, architect, or owner approved equivalent.
 - b. Dual Message LED signs display "PAID TICKETS OR CREDIT CARDS" or "CLOSED" message signs at Entry Lanes as shown on drawings.
 - c. Dual LED's in red ("CLOSED") and green ("PAID TICKETS OR CREDIT CARDS") to indicate Exit Lane status.
 - d. Controlled automatically by PARCS software or via manual override.
6. Paid Tickets or Credit Cards / Cashier / Closed (Dual Cashiered Automated Exit Lane **with** POF)
- a. Signs shall be direct view LED type TCL1442GGR-B162 from Signal-Tech or engineer, architect, or owner approved equivalent
 - b. Triple Message LED signs display "PAID TICKETS OR CREDIT CARDS", "CASHIER", or "CLOSED" message signs at Exit Lanes as shown on drawings.
 - c. Dual LED's in red ("CLOSED") and green ("PAID TICKETS OR CREDIT CARDS", "CASHIER",) to indicate Exit Lane status.
 - d. Controlled automatically by PARCS software or via manual override
- P. Metal Bollards
1. Fabricate metal bollards from Schedule 40 steel pipe 1/4-inch (6.4-mm) wall-thickness.
 2. Cap bollards with 1/4-inch- (6.4-mm-) thick steel plate.
 3. Fabricate bollards with 3/8-inch- (9.5-mm-) thick steel baseplates for bolting to concrete slab. Drill baseplates at all four corners for 3/4-inch (19-mm) anchor bolts.
 4. Prefabricated bollards are an acceptable alternative. Provide spec sheet with informational submittal.
 5. Cover bollards with traffic yellow HDPE sleeves.

Q. Uninterruptible Power Supplies (UPS)

1. Provide UPS back-up power.
2. In-Lane On-Line UPS back-up power for PARCS Lane Equipment shall be Alpha Micro 1000 or engineer approved equivalent.
3. Provide conditioned/emergency power through TCP/IP-enabled UPS units for the following components to protect components from loss of power, power spikes, and power sags:
 - a. PARCS Entry Lane Equipment (Overflow Lot Only)
 - b. PARCS Exit Lane Equipment (Overflow Lot Only)
 - c. Workstation
 - d. Networking equipment
 - e. Printer
4. UPS battery back-up sized to last approximately thirty (30) minutes.
5. Facilitate a 30% expanded load with an 80% continuous load factor.
6. On-line, solid state UPS that provides both backup power and transient surge protection.
7. Determine the UPS backup requirements for each of the locations where UPS backup is required, based upon the equipment that is being supplied by the Contractor.

R. Proximity Card Access System

1. Passive credential design capable of being read within 4 inches of reader.
2. Read and process credential within one second of presentation to reader.
3. Checking protocol that identifies multiple reads of same card within a few seconds (due to users "waving" card in front of reader), correcting false anti-passback reads.
4. Owner designated individuals shall be able to utilize the system for ingress and egress to/from the parking facilities at designated locations.
5. Authorized PARCS users shall have the ability to view and program proximity card privileges and access rules.
6. Provide the Owner with the appropriate tools to program and/or encode proximity cards from one or multiple PARCS workstations.
7. Anti-passback capabilities that can be turned on or off at the Owner's discretion for individual users, groups of users, or entire system.
8. Report the occupancy of proximity card customers in real-time.
9. Provide configurable user group parameters and rules that are accessible and changeable by the Owner on any of the PARCS workstations. Software code changes shall not be required to edit user group parameters and rules.
10. User groups and individuals within the user groups will each have the capability of being assigned access privileges based upon, date, day of week, time of day, or any combination thereof.
11. Upon reading the proximity card the display window will provide a welcoming or thank you message to include the users name and company (programmable message).

S. AVI Tag System

1. Use a radio frequency (RF) signal to identify AVI tag as the vehicle passes through the RF field at each monitoring location. The following are minimum reader design requirements:
 - a. Minimum read range of 10 feet at 5 MPH with a 98% minimum accuracy rate for active devices independent of rate of transmission.
 - b. Read and process credential within one second of presentation to reader. In combination with gate and other in-lane equipment, ability to maintain processing rate of 800 transactions per hour, including normal patron delays.
 - c. Adjustable read zones to prevent reading and crosstalk from any devices in adjacent lanes or from vehicles queued in line of vehicles.

- d. Interference protection from common or local sources of RF radiation.
 - e. Unaffected by neighboring electronic systems or electronically controlled devices.
 - f. No additional facility modifications such as fences, blocks or mounted absorption material.
 - g. Minimum 90-100 handshake counts per second to ensure the read is for the intended customer, as opposed to only marginal handshakes that may be indicative of an unintended read.
2. Antennas will be properly tuned and tested to ensure no cross-read is reported. Cross-read is an antenna picking up an AVI tag in an adjacent lane.
 3. Antennas will be properly tuned to ensure no skip-read is reported. Skip-read is an antenna picking up an AVI tag in queue of the same payment point

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Meetings: Meet with Electrical Contractor, before any rough-in work begins to:
 1. Review building plans as related to PARCS equipment.
 2. Discuss details and/or precautions to assure that all PARCS equipment functions properly.
 3. Determine that all required conduits and wiring are properly laid out.
- B. Site Verification of Conditions: Verify all existing conditions in the field prior to implementation. In the event that conditions in the field are different from the conditions described and shown in the Drawings, the Contractor shall notify the Owner in writing of the exact differences, and shall inform the Owner in writing of any implications the differences have on the project.
- C. Examine location of all equipment and office equipment to determine if there are any constraints of conflicts before office equipment installation.
- D. Examine rough-ins for electrical systems to verify actual locations of connections before parking control equipment installation.
- E. Additional Wiring: Provide all additional conduit and wiring which is needed for total system performance but which was not noted on Contract Documents at no additional cost to Owner.
- F. Verify that all required PARCS conduits and wiring is properly located and installed prior to installing PARCS equipment.
- G. Verify equipment layout in accordance with manufacturer's recommendation to allow proper movement of air through and around equipment.
- H. Test, adjust, and interface circuits prior to installation of PARCS equipment.
- I. Coordinate with Owner or Owner's Representative location and type of internet connection required for all external communications, i.e. credit card authorization/settlement, remote access, etc. within 30-days after award of contract.
- J. Examine substrates, areas, and conditions for compliance with requirements for installation tolerances, including equipment bases; accurate placement, pattern, and orientation of anchor bolts; critical dimensions; and other conditions affecting performance of the Work.
- K. Investigate adequacy and quality of electrical power to all existing lanes, determine grounding requirements and notify Owner in writing prior to submission of shop drawings of any requirements for new power service, conduit, wiring or grounding.

- L. Investigate existing communications conduit to all existing lanes and notify Owner in writing prior to submission of shop drawings of any requirements for replacement, relocation or extension of existing conduit not already identified for replacement or relation.
- M. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate installation, staging, and power connections with various trades to ensure a coordinated effort.
- B. Attend regularly scheduled project meetings.

3.3 INSTALLATION

- A. Verify that the installation locations are prepared and ready to have the equipment installation completed. The Contractor to notify the Owner, in writing, if the Contractor finds that the installation location is not prepared for installation due to unfinished work outside of the Contractor's scope of work. The written notification to provide detail of the elements that are in need of modification in order to prepare the location for equipment installation.
- B. Proceed with installation only after unsatisfactory conditions have been remedied.
- C. Install all PARCS equipment per equipment manufacturer recommendations.
- D. Any patches, upgrades, updates, or modifications to the PARCS software during the installation period require appropriate documentation and approval before the modification is made.
- E. During installation and the warranty period, the Owner will attempt to make available to the Contractor an area to serve as an office/work area for the technicians that support the system. It is the responsibility of the on-site technicians to keep the office/work area clean and free of all hazards.
- F. PARCS System Access
 - 1. During installation, warranty, and post-warranty, real-time communication between the PARCS servers and the Contractor's software support team for supporting the system may be required. This communication will be via an Owner-provided VPN connection and will be required to go through the firewall to get onto the Owner's network to access the PARCS servers.
 - 2. Coordinate with the Owner to obtain VPN access to the Owner network and set up user accounts.
 - 3. Each individual accessing the Owner network is required to have an account. Group accounts are prohibited.

3.4 FIELD QUALITY CONTROL/ACCEPTANCE TESTING

- A. Lane Acceptance Test (LAT)
 - 1. Conduct LATs as a demonstration to the Owner or its representatives that the installed equipment complies with the Contract, the Contractor's product data, and to other documentation, such as user manuals.
 - 2. When a PARCS equipment location installation has been completed, the Contractor shall conduct its internal testing of the installed equipment prior to putting into service. Internal testing shall follow the identical LAT test procedures that shall be used during LATs observed by the Owner.
 - 3. Upon successful completion of the Contractor's test, the Contractor and the Owner will perform the LAT to verify performance. The LAT shall be observed by the Owner or Owner's agent only after official notification that the LAT has been completed successfully.

4. LATs shall be conducted for each PARCS entry lane, exit lane, POF, including all subsystems and shall include tests of PARCS equipment and software. At the discretion of the Owner, the Contractor shall not activate the system for service until all LATs have been successfully completed for each lane or device and the Owner has notified the Contractor that it is ready to put the equipment into operation.
5. The Contractor shall provide test procedure documents for LATs as part of the Test Plan in accordance to the submittal guidelines.
6. The Contractor shall provide all ancillary items necessary to complete the LATs for testing purposes. In addition, the Contractor shall make available sufficient personnel to perform the LAT in an efficient and timely manner.
7. The LAT shall be considered successfully completed when all components have passed their respective test procedures and all test documents have been signed by the Owner and Contractor. Minor deviations resulting in the creation of punch list items shall not be considered grounds for failure of the overall LAT. Major deviations found during the LAT shall result in the retest of the lane or device.
8. The Contractor shall agree to credit the Owner from its total contract value for any travel and/or labor costs incurred by the Owner or its representatives as a result of additional effort required to retest failed devices.
9. Minor deviations are any failure that does not affect system functionality, fee calculation accuracy, transaction count accuracy, exception count accuracy, active ticket inventory accuracy (system vs. actual), transaction processing, credit card processing, calculations, or report accuracy.
10. Major deviations are any failures that do affect system functionality, fee calculation accuracy, transaction count accuracy, exception count accuracy, active ticket inventory accuracy (system vs. actual), transaction processing, credit card processing, calculations, or report accuracy.

B. Punch List

1. Starting with the beginning of installation through Final System Acceptance, the Contractor shall submit a document on a weekly basis showing the status of all outstanding system issues, regardless of severity, including the plan for resolution and estimated completion date.
2. All deviations noted during acceptance testing shall be recorded on the Punch List.

C. Operational Demonstration Test

1. After Substantial Completion and opening of the facility, the Owner or Owner's representative will conduct an operational test for thirty days.
2. Provide a qualified and experienced technician on-site within one hour during the thirty-day test.
3. Performance Standards:
 - a. All mechanical components are operational without downtime. 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. However, for each downtime period of greater than four hours, one day will be added to the test duration.
 - b. All electronic components are operational without downtime or programming problems for the complete monthly reporting cycle. For each down time period of one hour but less than eight hours or programming problems that delay report cycle, two days will be added to the test duration.
 - c. All reports correlate 100% with cash receipts in each CFC and POF.
4. An inoperative subsystem shall not be deemed unavailable if it has become inoperative because of:
 - a. Software failure attributable to POA provided virtual server environment
 - b. Outage of line power beyond required duration of UPS power backup
 - c. Malicious damage or vandalism to a component(s) by employees, customers or others
 - d. Network connectivity issues beyond the PARCS
 - e. PARCS failures due to issues and/or failures outside of the Contractor's control
 - f. Failures caused by a 3rd party
 - g. Act of God

- D. Final System Acceptance
 - 1. Final System Acceptance will be submitted by the Owner, in writing to the Contractor, upon successful completion of all acceptance tests, and upon verification by the Owner of complete resolution of all outstanding items on the Punch List.
 - 2. Warranty period shall commence upon Final System Acceptance at the completion of Phase 1.
 - 3. Warranty period of LPR subsystem (ADD ALTERNATE) shall commence upon Final System Acceptance at the completion of Phase 2.

3.5 INSTRUCTION AND TRAINING

- A. Training shall consist of thirty (30) hours over a one (1) month period.
- B. Training to be effectively allocated before, during, and after initial implementation of “go live” with equipment.
- C. An additional fifteen (15) hours of training shall be scheduled approximately three (3) months after “final acceptance” or earlier if requested by Owner or Owner’s agent.
- D. All instruction courses to consist of classroom instruction and actual “hands-on” experience. Classes to be set up in a room designated by the Owner. Provide one instructor for the duration of each program.
- E. By means of instructional classes augmented by individual instruction as necessary, the Contractor shall fully instruct the Owner’s designated staff in the operation, adjustment, and maintenance of all products, equipment, and systems.
- F. Coordinate scheduling of instruction and training classes with Owner to avoid conflicts and peak-period personnel demands. Submit a proposed instruction schedule at a joint meeting conducted prior to equipment installation. Owner will tentatively approve or suggest changes to the training schedule at that time.
- G. Submit an outline of the instruction material and approximate duration of the session. Ample time shall be allotted within each session for the Contractor to fully describe and demonstrate all aspects of the PARCS and allow Owner personnel to have hands-on experience with the PARCS.
- H. The instructor shall speak fluent English in a clear and precise manner.
- I. The class material shall include schematics, as well as an overview and descriptions of the equipment.
- J. The Contractor shall provide all documentation required for instructing Owner personnel. The Owner retains the right to copy training materials as frequently as required for ongoing internal use only.
- K. An instructional notebook or user’s manual shall accompany every instruction course. The Contractor shall submit a hardcopy of the user’s manual per the submittal guidelines. In addition, all manuals (instruction and maintenance) shall be submitted in electronic format (.PDF) on a CD-ROM or DVD. The user’s manuals shall be written in common English with appropriate photos, diagrams, and schematics to supplement the text.
- L. Training classes to be provided for the following groups:
 - 1. Supervisors
 - 2. Image Reviewers
 - 3. System Administrators
 - 4. Accounting/Audit

5. Maintenance Staff

3.6 EQUIPMENT PROTECTION

- A. All above ground equipment components installed near drive isles shall be protected from damage by vehicular movements with protective bollards or other barriers as recommended by the Contractor.
- B. Each above ground island-mounted device shall be protected by one or more bollards.
- C. Contractor is responsible for final bollard location to ensure installed bollard does not prevent access to the PARCS devices or interfere with the travel path of PARCS access doors.

END OF SECTION

**Section 111233 - Appendix A - Proposal Price Tabulation Form
ROANOKE-BLACKSBURG REGIONAL AIRPORT - PARCS PROCUREMENT DOCUMENTS**

TOTAL 2-YEAR "All Inclusive" BASE PRICE

(Written in Numerals)

(Written in Words)

Offering Company:

Date:

Name:

Signature:

ROANOKE-BLACKSBURG REGIONAL AIRPORT - UNIT PRICING

ITEM #	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE
Head End/Parking Office				
1	PARCS Facility Management Software	1	\$0.00	\$0.00
2	Open API with HonkMobile	1	\$0.00	\$0.00
3	Remote Licenses for ROA provided Workstations	2	\$0.00	\$0.00
4	Remote Licenses for ROA provided Mobile Devices	2	\$0.00	\$0.00
5	Workstation w/ Monitor, Keyboard, Mouse, Web-Cam, and Speakers	1	\$0.00	\$0.00
6	Networked Laser Printer	1	\$0.00	\$0.00
7	Intercom Server	1	\$0.00	\$0.00
8	Intercome Master Station	1	\$0.00	\$0.00
9	Off-line Validator	3	\$0.00	\$0.00
10	On-Line UPS Backup	2	\$0.00	\$0.00
11	Ticket Stock	1	\$0.00	\$0.00
12	Receipt Stock	1	\$0.00	\$0.00
13	Proximity Cards	100	\$0.00	\$0.00
14	AVI Tags	100	\$0.00	\$0.00
15	Barrier Arm Assembly	10	\$0.00	\$0.00
16	Break-away bolt or clip	50	\$0.00	\$0.00
Overflow Lot				
17	Entry: Ticket Dispenser	1	\$0.00	\$0.00
18	Proximity Reader	1	\$0.00	\$0.00
19	QR Scanner	1	\$0.00	\$0.00
20	Video Intercom Substation	1	\$0.00	\$0.00
21	AVI Reader - Pole-mount	1	\$0.00	\$0.00
22	In-Lane On-Line UPS Backup	1	\$0.00	\$0.00
23	Exit: Ticket Verifier	2	\$0.00	\$0.00
24	P2PE Credit Card Reader	2	\$0.00	\$0.00
25	Proximity Reader	2	\$0.00	\$0.00
26	QR Scanner	2	\$0.00	\$0.00
27	Video Intercom Substation	2	\$0.00	\$0.00
28	AVI Reader - Pole-mount	2	\$0.00	\$0.00
29	In-Lane On-Line UPS Backup	2	\$0.00	\$0.00
30	Automated Barrier Gate	3	\$0.00	\$0.00
31	Straight Arm	3	\$0.00	\$0.00
32	Saw-Cut, Install, and Seal - Vehicle Detection Loop	6	\$0.00	\$0.00
33	Dual-Channel Loop Detector	3	\$0.00	\$0.00

Short/Long-Term Lot				
34	Entry: Ticket Dispenser	3	\$0.00	\$0.00
35	Proximity Reader	3	\$0.00	\$0.00
36	QR Scanner	3	\$0.00	\$0.00
37	Video Intercom Substation	3	\$0.00	\$0.00
38	AVI Reader - Pole-mount	3	\$0.00	\$0.00
39	Red X / Green Arrow Sign	3	\$0.00	\$0.00
40	Exit: Ticket Verifier	3	\$0.00	\$0.00
41	P2PE Credit Card Reader	3	\$0.00	\$0.00
42	Proximity Reader	3	\$0.00	\$0.00
43	QR Scanner	3	\$0.00	\$0.00
44	Video Intercom Substation	3	\$0.00	\$0.00
45	AVI Reader - Pole-mount	3	\$0.00	\$0.00
46	Credit Card Sign	2	\$0.00	\$0.00
47	Exit: Cashier Fee Computer	1	\$0.00	\$0.00
48	P2PE Credit Card Reader	1	\$0.00	\$0.00
49	QR Scanner	1	\$0.00	\$0.00
50	Intercom Substation in booth	1	\$0.00	\$0.00
51	Cashier/Credit Card Sign	1	\$0.00	\$0.00
52	Short-Term Nested: Transfer Station	4	\$0.00	\$0.00
53	Ticket Reader/Encoder/Printer	4	\$0.00	\$0.00
54	Proximity Reader	4	\$0.00	\$0.00
55	QR Scanner	4	\$0.00	\$0.00
56	Video Intercom Substation	4	\$0.00	\$0.00
57	AVI Reader - Pole-mount	4	\$0.00	\$0.00
58	Lot Full Sign	2	\$0.00	\$0.00
59	Automated Barrier Gate	10	\$0.00	\$0.00
60	Straight Arm	10	\$0.00	\$0.00
61	Saw-Cut, Install, and Seal - Vehicle Detection Loop	20	\$0.00	\$0.00
62	Saw-Cut, Install, and Seal - Vehicle Detection Loop (temporary exit)	4	\$0.00	\$0.00
63	Dual-Channel Loop Detector	10	\$0.00	\$0.00
64	All Additional Equipment Cabinets and Junction Boxes.	1	\$0.00	\$0.00
65	Disposal - ROA to store on-site - include cost of removal and transport only	1	\$0.00	\$0.00
66	Installation of new PARCS	1	\$0.00	\$0.00
67	Relocation of new PARCS in Phase 2	1	\$0.00	\$0.00
68	Training	1	\$0.00	\$0.00
69	Commissioning	1	\$0.00	\$0.00
70	Documentation/submittals/legal	1	\$0.00	\$0.00
71	Freight/Shipping	1	\$0.00	\$0.00
72	EDIT		\$0.00	\$0.00
73	EDIT		\$0.00	\$0.00
74	EDIT		\$0.00	\$0.00
75	EDIT		\$0.00	\$0.00
TOTAL 2-YEAR "All Inclusive" Base price				\$0.00

ADDITIONAL EQUIPMENT, COSTS, DEDUCTIONS, ETC.

76	Additional Hours of Training (per hour)	1	\$0.00	\$0.00
77	EDIT		\$0.00	\$0.00
78	EDIT		\$0.00	\$0.00
79	EDIT		\$0.00	\$0.00
80	EDIT		\$0.00	\$0.00
TOTAL ADDITIONAL EQUIPMENT, FEES, OR COSTS				\$0.00

ADDITIONAL RECURRING FEES

ITEM #	DESCRIPTION - TO BE INVOICED AT CONTRACT ANNIVERSARY	QUANTITY	UNIT PRICE	TOTAL PRICE
81	Recurring Fees (year 3)	1	\$0.00	\$0.00
82	Recurring Fees (year 4)	1	\$0.00	\$0.00
83	Recurring Fees (year 5)	1	\$0.00	\$0.00
84	Recurring Fees (year 6)	1	\$0.00	\$0.00
85	Recurring Fees (year 7)	1	\$0.00	\$0.00
TOTAL ADDITIONAL RECURRING FEES				\$0.00

ADD ALTERNATE 1: Preventive Maintenance and Service Contract

ITEM #	DESCRIPTION - TO BE INVOICED AT CONTRACT ANNIVERSARY	QUANTITY	UNIT PRICE	TOTAL PRICE
86	Year Three	1	\$0.00	\$0.00
87	Year Four	1	\$0.00	\$0.00
88	Year Five	1	\$0.00	\$0.00
89	Year Six	1	\$0.00	\$0.00
90	Year Seven	1	\$0.00	\$0.00
ALTERNATE 1: TOTAL PM & SERVICE				\$0.00

ADD ALTERNATE 2: Extended Parts Warranty

ITEM #	DESCRIPTION - TO BE INVOICED AT CONTRACT ANNIVERSARY	QUANTITY	UNIT PRICE	TOTAL PRICE
91	Year Three.	1	\$0.00	\$0.00
92	Year Four.	1	\$0.00	\$0.00
93	Year Five.	1	\$0.00	\$0.00
94	Year Six	1	\$0.00	\$0.00
95	Year Seven	1	\$0.00	\$0.00
ALTERNATE 2: TOTAL WARRANTY				\$0.00

ADD ALTERNATE 3: SPARE PARTS - per SECTION 1.6 C 4

ITEM #	DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE
96	EDIT		\$0.00	\$0.00
97	EDIT		\$0.00	\$0.00
98	EDIT		\$0.00	\$0.00
99	EDIT		\$0.00	\$0.00
100	EDIT		\$0.00	\$0.00
101	EDIT		\$0.00	\$0.00
102	EDIT		\$0.00	\$0.00
103	EDIT		\$0.00	\$0.00
104	EDIT		\$0.00	\$0.00
105	EDIT		\$0.00	\$0.00
TOTAL ADD ALTERNATE 3: SPARE PARTS				\$0.00

ADD ALTERNATE 4: LICENSE PLATE RECOGNITION

ITEM #	DESCRIPTION - TO BE INVOICED AT CONTRACT ANNIVERSARY	QUANTITY	UNIT PRICE	TOTAL PRICE
Head End				
106	LPR Facility Management Software	1	\$0.00	\$0.00
107	Image Review Workstation Software on PARCS Workstation	1	\$0.00	\$0.00
108	AVI Tags (Deduct)	-100	\$0.00	\$0.00
Overflow Lot				
109	LPR Pole Mount Cameras	3	\$0.00	\$0.00
110	LPR Poles	3	\$0.00	\$0.00
111	Saw-Cut, Install, and Seal - Vehicle Detection Loop	3	\$0.00	\$0.00
112	LPR Quick-Sensitive Loop Detector	3	\$0.00	\$0.00
113	Trenching, Conduit, Concrete	1	\$0.00	\$0.00
114	AVI Pole-Mounted Reader (Deduct)	-3	\$0.00	\$0.00
Short/Long-Term Lot				
115	LPR Pole Mount Cameras	10	\$0.00	\$0.00
116	LPR Poles	10	\$0.00	\$0.00
117	Saw-Cut, Install, and Seal - Vehicle Detection Loop	10	\$0.00	\$0.00
118	LPR Quick-Sensitive Loop Detector	10	\$0.00	\$0.00
119	Installation	1	\$0.00	\$0.00
120	Training	1	\$0.00	\$0.00
121	Commissioning	1	\$0.00	\$0.00
122	Documentation/submittals/legal	1	\$0.00	\$0.00
123	Freight/Shipping	1	\$0.00	\$0.00
124	AVI Pole-Mounted Reader (Deduct)	-10	\$0.00	\$0.00
125	AVI Installation (Deduct)	-1	\$0.00	\$0.00
126	EDIT		\$0.00	\$0.00
127	EDIT		\$0.00	\$0.00
ADD ALTERNATE 4: LPR TOTAL				\$0.00

ADD ALTERNATE 4: Preventive Maintenance and Service Contract - LPR

ITEM #	DESCRIPTION - TO BE INVOICED AT CONTRACT ANNIVERSARY	QUANTITY	UNIT PRICE	TOTAL PRICE
128	Year Three (Reduced for AVI Deduct)	1	\$0.00	\$0.00
129	Year Four (Reduced for AVI Deduct)	1	\$0.00	\$0.00
130	Year Five (Reduced for AVI Deduct)	1	\$0.00	\$0.00
131	Year Six (Reduced for AVI Deduct)	1	\$0.00	\$0.00
132	Year Seven (Reduced for AVI Deduct)	1	\$0.00	\$0.00
ALTERNATE 4: TOTAL PM & SERVICE LPR				\$0.00

ADD ALTERNATE 4: Extended Parts Warranty - LPR

ITEM #	DESCRIPTION - TO BE INVOICED AT CONTRACT ANNIVERSARY	QUANTITY	UNIT PRICE	TOTAL PRICE
133	Year Three (Reduced for AVI Deduct)	1	\$0.00	\$0.00
134	Year Four (Reduced for AVI Deduct)	1	\$0.00	\$0.00
135	Year Five (Reduced for AVI Deduct)	1	\$0.00	\$0.00
136	Year Six (Reduced for AVI Deduct)	1	\$0.00	\$0.00
137	Year Seven (Reduced for AVI Deduct)	1	\$0.00	\$0.00
ALTERNATE 4: TOTAL - WARRANTY LPR				\$0.00

ADD ALTERNATE 5: PAY ON FOOT (POF)

ITEM #	DESCRIPTION - TO BE INVOICED AT CONTRACT ANNIVERSARY	QUANTITY	UNIT PRICE	TOTAL PRICE
138	Cash and Credit Pay-on-Foot	1	\$0.00	\$0.00
139	Credit Only Pay-on-Foot	1	\$0.00	\$0.00
140	Installation	1	\$0.00	\$0.00
141	Training	1	\$0.00	\$0.00
142	Commissioning	1	\$0.00	\$0.00
143	Documentation/submittals/legal	1	\$0.00	\$0.00
144	Freight/Shipping	1	\$0.00	\$0.00
145	EDIT		\$0.00	\$0.00
146	EDIT		\$0.00	\$0.00
147	EDIT		\$0.00	\$0.00

ALL ALTERNATE 5: POF TOTAL

\$0.00

ADD ALTERNATE 5: Preventive Maintenance and Service Contract - POF

ITEM #	DESCRIPTION - TO BE INVOICED AT CONTRACT ANNIVERSARY	QUANTITY	UNIT PRICE	TOTAL PRICE
148	Year Three	1	\$0.00	\$0.00
149	Year Four	1	\$0.00	\$0.00
150	Year Five	1	\$0.00	\$0.00
151	Year Six	1	\$0.00	\$0.00
152	Year Seven	1	\$0.00	\$0.00

ALTERNATE 5: TOTAL - PM & SERVICE POF

\$0.00

ADD ALTERNATE 5: Extended Parts Warranty - POF

ITEM #	DESCRIPTION - TO BE INVOICED AT CONTRACT ANNIVERSARY	QUANTITY	UNIT PRICE	TOTAL PRICE
153	Year Three.	1	\$0.00	\$0.00
154	Year Four.	1	\$0.00	\$0.00
155	Year Five.	1	\$0.00	\$0.00
156	Year Six	1	\$0.00	\$0.00
157	Year Seven	1	\$0.00	\$0.00

ALTERNATE 5: TOTAL - WARRANTY POF

\$0.00

