ATTACHMENT B1: SMART PARKING SYSTEM SPECIFICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the requirements for furnishing and installing the Smart Parking System (SPS), an operational and system-based technology improvement to enable truckers and dispatchers to reserve parking and make parking fee payments.

B. This document includes Attachment B2: GoPort ATMS SPS 100% Design High-Level Data Flow Diagram.

C. This document includes Attachment B3: Functionality and User Privileges.

1.2 SYSTEM DESCRIPTION

A. General:

1. The SPS is one component of the Port of Oakland (Port) Freight Intelligent Transportation System (FITS) Project.
2. The SPS will provide the Port's users the ability to understand the current parking availability across the Port's multiple lots, reserve a parking stall, and pay parking fees.
3. Currently, approximately 3,200 parking stalls in two separate lots encompassing approximately 72 acres primarily serve drayage truck parking and container storage / staging needs associated with operations of the Seaport.
4. The SPS, at a concept level, shall:
    a. Provide advanced technologies and parking systems that provide data for user feedback, dissemination, and smart payment systems;
    b. Maximize Port revenue through accurate and efficient management of the parking facilities;
    c. Manage the Ports' parking resources with technological systems to provide an acceptable level of service and user experience consistent with newly deployed systems at the Seaport, as specified by the Port;

5. For operations and workflow improvement, the SPS shall:
    a. Establish an automated pre-gate process through web-based or wireless mobile device application;
    b. Provide patron account administration for Licensed Motor Carriers (LMCs) and Owner/Operators;
    c. Provide a verification process at the gate with no manual data entry;
    d. Administer company, vehicle, cargo and driver correlation and confirmation via visual inspection;
    e. Automate equipment identification – radio-frequency identification (RFID) on truck, Commercial Driver's License (CDL) or Driver, and optical character recognition (OCR) of Container;
    f. Implement basic security measures at entry/exit points; and
    g. Optimize existing parking area by providing information of parking availability.

6. The SPS will replace the current system used in port truck parking / container storage and staging lots.
7. The SPS will include the following functional services:
    a. Parking Stall Inventory Management.
    b. Driver Inventory Management.
    c. Parking Reservation System.
    d. Gate Agent Application.
    e. Enforcement.
    f. Financial Management.
    g. Reporting.

8. The SPS will be implemented with a central processing server that may be hosted "on-premises" or virtually using a Cloud services provider.
9. The SPS will be accessed by various users as follows:
    a. TMC/EOC operators access via the ATMS.
    b. Truckers and Carriers access via GoPort App (or, in the absence of GoPort, through the SPS interface) or through an open API to third-party software.
    c. Port staff and the parking operator (and system administrators) access via the Smart Parking System.

B. System Actors:

1. The System Actors for the SPS include, but are not limited to:
    a. The client for the SPS Project is Alameda CTC. Completed software will be owned and maintained by the Port.
    b. Potential users and data contributors of the SPS include:
        1) Port of Oakland.
        2) Motor Carrier Operators and Dispatchers.
        3) Marine Terminal Operators.
        4) Non-Vessel Operating Common Carriers.
        5) Parking Operator.

C. User Types: As shown in Table 1, SPS shall provide the following functionalities for the following defined user types.

Table 1

User Type	**Access**
GoPort Driver Registered User	• GoPort Reservations module • GoPort Payments module
GoPort LMC Registered User	• GoPort Reservations module • GoPort Payments module • Manage list of approved drivers
Port Staff	• All functionality of the SPS **except** security • Analyze usage • Create/modify performance reports

User Type	Access
Gate Agent	• All functionality of the SPS **except** security • Verify reservations, driver, chassis, and container information at check-in • Check-out driver, chassis, and containers
Yard Supervisor	• All functionality of the SPS **except** security • Use the stall inventory and reservation modules to monitor usage in the parking areas
Parking Operator Manager	• All functionality of the SPS • Responsible for overall parking area operations
System Administrator	• All functionality of the SPS • Perform all SPS system administration • Creating and managing security accounts

D. Integration:

1. SPS shall function as a standalone system and shall continue operation in a minimal capacity in the absence of integration with the GoPort and ATMS servers/software.

1.3 SUBMITTALS & PROJECT DOCUMENTATION

A. The Contractor shall prepare a Project Binder with the Project's documentation that consists of the following:

1. Project Management/Work Plan, detailing the proposed approach to completing the Project, including identification of relevant tasks and an organization/contact chart of personnel;
2. Quality Plan, detailing the Contractor's Quality Assurance Procedures;
3. SPS Design, detailing the SPS design and functionality;
4. Factory Acceptance Test Procedures, describing the tests that will demonstrate that the system works according to the defined requirements in a controlled environment;
5. Installation Plan, detailing the installation procedure;
6. Cutover Plan, detailing the process for transitioning from the previous system to the new system;
7. System Acceptance Test Plan, detailing the approach to system testing;
8. Training Plan, detailing course content, training time requirements, and who should attend;
9. Maintenance and Operations Support Plan, detailing routine maintenance measures, response for repairs, communications service and operations support; and
10. Statement of Warranty.

B. All documentation shall be in English, shall utilize U.S. Customary measurements, and shall be submitted directly to the Alameda CTC electronically.

C. Due to the substantial amount of documentation involved in this Project, Contractor shall work with the Engineer to develop and submit to the Alameda CTC a Documentation Management System.

1. The Document Management System shall include an organized electronic library of all versions of all submittals and a log of the contents.
2. This shall be completed within 60 days after Notice to Proceed (NTP).

D. The Alameda CTC and the Contractor shall mutually agree on a documentation file index that shall provide an overall methodology for referencing documents generated during the Project.

1. File type and organization of electronic versions of documentation shall be mutually agreed on by the Alameda CTC and Contractor.
2. All subsequent documentation shall be referenced to the file index, and Contractor and the Alameda CTC shall mutually maintain the file index in current condition to show all documents that have been generated and their status.

E. Documentation shall be readily available to the Engineer, designated personnel within the Contractor's organization, and additional Port designated personnel. Security methods shall be available to restrict access by others.

F. The Contractor shall correct any inaccuracies and add plans to correct any deficiencies as identified by the Alameda CTC or as necessary to document changes made during acceptance testing. Final versions of the as-built system shall be submitted within two (2) weeks after acceptance testing or training, whichever is later.

G. The Contractor shall provide all necessary software and data to allow the Alameda CTC to fully maintain and update all applications software, computers, and data shall include as-built versions of the following:

1. Software Requirements Specification;
2. Software Version Description Document, or equivalent;
3. All "batch" or equivalent files, and all object libraries and "include" files, for editing, compiling, linking, and installing application software. Corresponding instructions shall also be provided;
4. All files required to define, allocate, and load the database, and any other data files required to define, configure, load, or operate the system. Corresponding instructions shall also be provided;
5. A list of the configuration parameters and their values. A list of potential problems if the configuration parameters are set to extreme values;
6. Style guide of guidelines for usage of colors, fonts, and other graphical elements of the Smart Parking System design; and
7. Images for SPS icons, logos and other design elements.

H. The Contractor shall be required to provide source code and sufficient documentation including source code documentation in Escrow to permit modification of the delivered software without the necessity of contacting the Contractor in the event the Contractor is unwilling or unable to

undertake such modifications. All licenses and certifications shall be provided by the Contractor and retained by the Alameda CTC.

I. The Contractor shall include the necessary time and resources to modify the documentation to incorporate comments from the Alameda CTC. The Contractor shall then include additional time for the Alameda CTC to review the revised documentation.

J. The Project documentation shall be complete, accurate, up-to-date, and shall only contain information that pertains to the system installed.

K. The Contractor shall provide cutover documentation describing the process from migrating from the old system to the new system. The cutover plan shall include the full range of migration details, including equipment installations, central system transition, communications transition, and timing for testing, training, and documentation relative to the cutover schedule.

L. The Contractor shall provide a traceability matrix during System Design that provides cross-mapping of SPS requirements to the design documents or to Future Project stage's documentation.

1. Cross referencing shall be at a detailed level and shall indicate that the requirements are fulfilled by the designed system.
2. At a minimum, the mapping shall reference the chapter and section of the design document that describes how the system meets the requirement.

M. The Alameda CTC and/or designated representative will review and approve or take other appropriate action upon the Contractor's submittals.

1. The Alameda CTC's action will be taken as to cause no delay in the Work or in the activities of the Contractor.
2. Review of such submittals is not conducted for determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract.
3. The Alameda CTC's or designated representative's review will not constitute approval of safety precautions or, unless specifically stated by the Alameda CTC or designated representative of any construction means, methods, techniques, sequences, or procedures.
4. The Alameda CTC's or designated representative's approval of a specific item does not indicate approval of an entire assembly of which the item is a component.

N. Following review, approved documents will be identified as having received such approval with a dated acknowledgement. Disapproved documents and drawings will be returned to the Contractor with a dated acknowledgement and directions for correction and re-submittal.

1.4 QUALITY ASSURANCE

A. The Contractor shall implement a Quality Assurance (QA) program to ensure the quality of the equipment installed.

1. The Contractor shall submit to the Alameda CTC within 60 days of the Notice-To-Proceed a comprehensive Quality Assurance (QA) Program Plan designed to ensure the quality of

all activities, including design, purchasing, inspection, handling, assembly, testing, storage, shipping, and warranty/repair work.

2. The plan shall describe all quality control procedures of the Contractor and any sub-suppliers.
3. The Contractor shall conduct regular inspections in accordance with guidelines defined by the QA Program Plan.
4. Performance of any design or construction work shall not commence until the Quality Assurance and Control Plan relating to such Work has been accepted by the Alameda CTC.
5. The Contractor shall update the QA Program Plan as necessary, when any deficiencies in the Work are discovered.

B. The Quality Assurance (QA) program shall ensure the quality of the software and hardware installed.

1. For each installation the installers shall fill out a checklist and certify that all required installation steps, operational checks, and quality control (QC) reviews have been performed.
2. The checklists shall be submitted to the Alameda CTC weekly during installation, and shall be considered a required item for System Acceptance.

C. The Alameda CTC will, at its own discretion, perform QA monitoring of work done under this contract, including monitoring of the Contractor's or Subcontractor's QA activities.

1. Upon request, the Contractor's QA records shall be made available to the Alameda CTC for inspection.
2. Such QA activities performed (or not performed) by the Alameda CTC shall not reduce nor alter the Contractor's QA responsibilities or its obligation to meet the requirements of this document.

1.5 WARRANTY

A. All materials, components, and parts furnished under this Contract shall be new and of high quality and in conformance with this contract.

1. The Contractor shall represent that all equipment offered under these specifications is new.
2. Used, shopworn, demonstrator, prototype, remanufactured, reconditioned, or discontinued equipment shall not be supplied under this contract.
3. Use of existing Port equipment, or software will only be accepted, if properly inventoried and documented and under the Alameda CTC or Port's written permission.

B. All workmanship provided under this contract shall be of high quality, and in conformance with this contract.

C. The Contractor warrants that all software meets the functional and performance requirements as described in the requirements.

1. The Contractor warrants that all materials, components, parts and workmanship of SPS elements provided under this contract to be free of defects.

2. Such warranties by the Contractor shall apply to all SPS software, components, parts and workmanship, whether performed or provided by the Contractor, Contractor's Subcontractors, or suppliers at any tier.
3. This system warranty shall commence upon System Acceptance and shall be for a period of five (5) years from system acceptance by the Alameda CTC, except for any longer period provided in this contract.

D. The Contractor shall furnish, at its own expense, all material, parts, labor, taxes, shipping costs, remote access equipment and services, and all other expenses required to fulfill its SPS warranty obligations.

E. All installation and hardware provided by the Contractor shall be covered by a parts and labor Warranty, which shall commence upon System Acceptance, and shall be for a period of five (5) years, except for any longer period provided in this contract.

F. The Contractor shall make best efforts to repair or replace equipment from failures on a one (1) week turnaround throughout the warranty period. The maximum time for repair or replacement is 21 days.

G. Central system equipment failures shall be repaired or replaced by the Contractor within twenty-four (24) hours.

H. During the warranty period, the Alameda CTC shall receive all updates at no cost for all software applications, interfaces, and/or modules provided by the Contractor to the Alameda CTC prior to System Acceptance, including those which correct bugs or enhance system functionality).

I. All issues identified during the warranty period shall be resolved under the warranty even if the warranty period expires before the issue is resolved.

J. For each failed component, the Contractor shall provide the Alameda CTC with a failure analysis report. The Contractor and the Alameda CTC will work together in determining if the failed component will be repaired or replaced.

K. The Contractor shall provide during the warranty period the latest compatible version of the failed part/hardware with the latest firmware.

L. Systemic failures shall be defined as the occurrence of component failures in excess of 10% during the warranty period.

M. In the event of systemic failures during the warranty period, the Contractor shall at their expense, within 30 days of notification of such instance, commence a modification program to repair or replace all such components, including those that have passed beyond the warranty period, to correct the cause(s) of such failures.

1. The design of the repair or replacement for the component(s) involved in each such modification program shall be developed by the Contractor to remedy the nature and probable cause of the component failures and shall be approved by the Alameda CTC.
2. Repair and/or replacement of components pursuant to each modification program shall be according to the same provisions herein as if such components were failed components requiring warranty repair and/or replacement, whether actual failures for some or most of

the involved components have occurred following notification of a requirement for a modification program.

N. Materials, parts or components used for replacement under the initial warranty period shall assume the original warranty period.

O. All software provided by the Contractor shall be covered by the Warranty from installation until five (5) years from System Acceptance.

1.6 MAINTENANCE

A. Contractor shall provide first line (diagnostics, troubleshooting, configuration and remove and replace) maintenance training.

B. Contractor shall provide preventative maintenance training during first line maintenance training.

C. The Contractor shall provide Maintenance Manuals documenting how the system components were configured, how to manage system configurations, and the schedule/procedures for preventative maintenance, inspection, fault diagnosis, component replacement and warranty administration on each system component.

PART 2 - PRODUCTS

2.1 SMART PARKING MODULES

A. General:

1. Lot configuration files shall be developed by the Contractor and made available in the module for Port modification.
2. Lot configuration files shall be editable.
3. Lot configuration files shall be GIS-formatted.
4. A driver database/inventory file shall be developed by the Contractor and made available in the module for Port modification.
5. The driver database/inventory file shall be editable.
6. A user access tool shall be in place to prevent unauthorized access to editable files.
7. A banking agreement must be in place to allow electronic transactions.

B. Parking Stall Inventory Management:

1. The system shall maintain an inventory of existing parking stalls at all terminals. Initial inventory shall be developed by the Contractor.
2. The inventory shall contain records of all parking stalls.
3. The inventory shall maintain the following attributes of each stall, if possible:
    a. A unique identifier
    b. Parking area (terminal)
    c. Configuration (size) of each stall
    d. Availability status (available, not available, and reason for unavailability [rented, taken out of service by The Port or parking operator])

e. Dates of availability
f. Parking rate/fee code
g. Renter/user

4. Each stall or group of stalls shall be given an attribute regarding permissible users that may reserve a given stall.
   a. Permissible users shall be a parameter that can be set by the Port.
   b. Permissible users shall be configurable to change for a particular stall or group of stalls at a future time/date.
   c. Permissible users shall include the following groups:
      1) Certain groups (i.e. carriers with an eModal account, "over the road" carriers, or both), so that a parking stall or stalls can be reserved for any eModal user, any "over the road" carrier without an eModal account, or any user on a first-come-first serve basis.
      2) Individual carriers (e.g. ABC trucking) with accounts in the Parking Reservation System, so that a parking stall or stalls can be reserved for that specific carrier.

5. The system shall provide a geographic location identifier that will accurately identify the stall on a map application.
6. The inventory shall be identified so that the user can tell when the inventory and configuration were last updated.
7. The system shall be scalable to allow for changes in stall quantity, location and other attributes as well as handle additional parking areas that may become available.
8. The system shall know each stall's status.
9. The stall status shall include:
   a. Current availability (rented, not rented, out of service [can't be rented]).
   b. Future availability (when the stall will be available for rent).
   c. The current renter. This information shall be available only to the parking administrator.

10. The system shall display each stall's status graphically (map) and in list form.
11. The stall map shall be editable in order to modify the layout.
12. The system shall be capable of updating the inventory and configuration of each stall.
    a. The system shall reflect the change. Stalls that are no longer available and are removed shall be designated inactive and archived with a date and reason for removal.

13. If a parking area is expanded or new parking areas come on-line, new stall records and any new stalls will be assigned a new unique identifier.
14. Users shall be able to query the database to view the list of all stalls in a particular parking lot or all parking lots. The query shall have various filters available to query on a specific stall parameter and display the listing.
15. The system shall allow Users to make the stalls unavailable for rent.
16. The system shall allow Users to return the stall status to available.
17. They system shall illustrate an area map of all parking lots for intuitive geographic reference.

C. Driver Inventory Management:
   1. The system shall maintain an inventory of approved drivers.
   2. The inventory shall contain records of all approved drivers.

3. The driver data for the inventory shall be provided from:
    a. eModal through an interface with eModal, and
    b. independent over-the-road truckers creating their private account.
4. The inventory shall maintain the following attributes of each driver:
    a. A unique identifier.
    b. Carrier (if affiliated with one via eModal).
    c. Driver's License information, to include:
        1) Driver's License Number.
        2) State/Provence of Issue.
        3) Expiration Date.
        4) Status (active, revoked).
        5) Date of Birth.
        6) Headshot Photo of Driver.

5. The inventory shall be identified so that the User can tell when the inventory records were last updated.
6. TMC/EOC operations staff and/or parking operators shall be able to query the database to view the list of all drivers. The query shall have various filters available to query on specific driver parameters and display the listing.

D. Parking Reservation System:

1. The system shall provide the ability for users to reserve one or more stall(s) on a daily, weekly or monthly basis. Users include those carriers with an eModal account and over-the-road truckers (without an eModal account).

2. The system shall allow carriers to log into the reservation system with their eModal account number.
    a. Relevant SPS reservation information shall be automatically populated by eModal data.
3. The system shall allow over-the-road truckers (without an eModal account) to log into the reservation system with their private SPS or GoPort account.
4. The reservation system shall require the following information from users to make a reservation:
    a. Carrier (this will be automatically populated at sign-in).
    b. Driver and CDL number.
    c. Exit Carrier (for Street Turn).
    d. Exit Driver (for Street Turn) and CDL number.
    e. eModal account number (for use by eModal account holders).
    f. Terminal.
    g. Stall size.
    h. Power requirement.
    i. Stall(s) number.
    j. Reservation date range.
    k. Truck number.
    l. Container number.
    m. Listed as “other” if not a maritime related truck / container.

5. The system shall provide users with the ability to schedule street turns reservation so that:
    a. a carrier may make a reservation to park and leave a chassis, container, or truck in a stall, and

b. remove the chassis, container or truck by a different driver of the same carrier or a different carrier (and driver) at a different date and time.

6. The system shall allow a user to access and query the stall inventory to identify the availability of stalls.
7. The user shall be able to query by:
   a. (Terminal) location.
   b. Stall configuration.
   c. Dates and/or times (range) of availability.
   d. Power availability.
   e. Any combination of the above parameters.

8. The system shall respond to a query with an inventory of available stalls that match the query parameter.
   a. The response shall be presented in graphical and list form.

9. The user shall be able to select stall(s) for reservation.
10. The system shall allow stall(s) to be reserved using a credit card or the patron account identification.
11. The system shall provide the user with confirmation that the reservation was successful.
    a. The reservation confirmation shall have a unique identifier and include the user, stall identification, date range of reservation, cost, and date of reservation.
    b. The system shall permit a refund if the reservation is cancelled within an allowable period of time, as configured by the Port.

12. The reservation shall be stored in the system's database.
13. The reservation shall be retrievable by the user.
14. The system shall have a timer to cancel the reservation attempt after a user programmable time period.
    a. Once the reservation is cancelled, the stalls will be returned to the inventory and the system shall update the inventory.

15. The system shall allow users to cancel a reservation within a Port programmable time period.
    a. The cancel reservation shall have a unique identifier and include the user, original reservation identifier, and date of reservation cancellation.

16. The system shall allow users to modify a reservation within a user programmable time.
    a. Users may modify the following:
       1) Stall number (different stall or increase and decrease the number of stalls).
       2) Dates of reservation.
       3) Driver and CDL number.
       4) Truck number.
       5) Container number.
       6) Exit Carrier for a Street Turn.
       7) Exit Driver and CDL number for a Street Turn.
       8) Addition of an Exit Carrier and Driver (for a Street Turn) if one was not identified in original reservation.
    b. The modified reservation shall have a unique identifier and include the user, original reservation identifier, the modifications made to the reservation and the date and time of the modification.

17. The system shall provide the ability to develop and maintain a Waiting List for monthly reservations.
    a. The Waiting List will be based on reservation requirements including:
        1) Terminal.
        2) Stall Size.
        3) Number of stalls.
        4) Power requirement.
        5) Dates of reservation.

18. The Waiting List shall be developed by the system when all stalls for specific requirements are reserved.
19. Users trying to make a reservation when no availability exists will be notified within the reservation system that no availability exists and will be queried if they wish to be placed on the Waiting List.
    a. Users can accept the Waiting List invitation and the Reservation will be placed on the Waiting List.
    b. Users will remain on the Waiting List until they remove themselves or space becomes available and a reservation is made.

20. When requested space becomes available, the system shall notify the highest prioritized user on the Waiting List that the space is available.
    a. The user will have a specific period of time to deny request to make a reservation from the Waiting List or to make a reservation.
    b. If the user doesn't deny the invitation or make a reservation within a user-specified time period, the user will be removed from the Waiting List and the next highest prioritized user will be sent an invitation.

21. The system shall allow users to remove themselves from the Waiting List.
    a. The system shall record the removal with a unique identifier, identify the "remover", and the date and time of the removal.

22. The system shall prioritize users on the Waiting List based on:
    a. Existing reservation holders, and
    b. date and time of placement on the Waiting List. In this order.
    c. The Waiting List priority shall change as new user join the Waiting List.
    d. Users on the Waiting List shall be able to query the list to see their status on the list.

E. Gate Agent Application:

1. The system shall allow the gate agent to enter any of the following information to query the database for reservations:
    a. Carrier.
    b. Driver and CDL number.
    c. Exit Carrier (for Street Turn).
    d. Exit Driver (for Street Turn) and CDL number.
    e. eModal account number (for use by eModal account holders).

2. The system shall query the database and present the gate agent with a list of reservations fitting the search criteria.
3. The system shall allow the gate agent to select the appropriate reservation from the presented list and check-in the reservation.

4. The system shall update the status of the reservation as checked-in in the database.
5. The system shall allow the gate agent to edit any of the reservation information if it does not match the reservation to check-in reservation.
6. The system shall allow the gate agent to add comment text to the reservation (in the event that a private trucker parks his personal vehicle in the rented stall when he drives truck out)
7. The system shall allow the gate agent to create a reservation at the gate for transient users.
8. The system shall allow the gate agent to check-out a truck when it leaves the parking area.

F. Enforcement:

1. The system shall allow the gate agent, yard supervisor, and Port to query the database for occupied stalls.
2. The system shall provide the gate agent, yard supervisor, and Port with a summary of occupied stalls.
3. The occupied stall summary shall be available in list and graphic form.
    a. The summary shall provide the following information:
        1) Carrier.
        2) Truck ID.
        3) Chassis ID.
        4) Container ID.
        5) Stall number.
        6) Reservation ID.
        7) Date Time.

4. The system shall allow the yard supervisor to enter data on the user/parker if the user/parker is illegally parked (wrong stall).
5. The system shall be capable of automatically determining if a parker is illegally parked (i.e., exceeded their rental time).
6. The system shall notify the yard supervisor and the carrier automatically when this condition occurs.
    a. This notification shall include:
        1) Carrier,
        2) Truck ID,
        3) Chassis ID,
        4) Container ID,
        5) Reservation number,
        6) Violation (exceeded rental time, etc.),

G. Financial Management:

1. The system shall use a PCI Level 2 Service Provider for payment processing.
2. The system shall accept payment at time of reservation for stall rental.
3. The system shall allow payment at the gate (checking in) via a smart device.
4. The system shall be able to generate invoices on a user-configurable time period.
5. The system shall be able to generate invoices for:
    a. Reservations (including modifications).
    b. Parking fines.

6. The system shall be able to adjust reservation and parking fine pricing by administrators:
    a. Manually.
    b. By Time-of-Day.

c. By date period.
d. In real-time based on demand levels.

7. The system shall be able to generate an electronic receipt immediately after payment. The receipt shall be accessible by the user through their GoPort account.
8. The system shall be able to generate a refund to a user's GoPort account.
9. The system shall be able to generate an invoice history for each customer that is accessible through the GoPort App.

H. Reporting:

1. The system shall be able to query the database and provide the following reports:
   a. Daily Entry/Exit Event Log: A listing of any events related to pick-up and drop of trucks, container loads as well as daily and longer-term parking of tractors or chassis and users who made changes to allow for exceptions.
   b. Revenue Reconciliation Report: A management report designed to provide all revenue information in a single location so that total revenue collected versus total revenue expected may be reconciled on a daily basis.
   c. Gate Pass Sequence Reconciliation Report: A report designed to account for all movements into and out of each parking area.
   d. Cancelled Transaction Report: A summary report of each cashier's cancelled transactions.
   e. Detailed Parking Revenue Report: A summary report for each parking area activity. The report shall provide:
      1) A revenue total.
      2) A summary of non-revenue transactions by type.
      3) A summary of revenue transactions by type and rate.
      4) A summary of the number of transactions by type.
      5) The exit lane count totals.
      6) Processing errors to balance or audit a cashier shift.

   f. Detailed Revenue Payment Report: Shall provide a sum total and chronological listing of each payment transaction by company, by parking area location for a selected time period.
   g. Detailed Transaction Report: Provide a chronological listing of each transaction processed by each lane by shift.
   h. Daily Summary Report: Provide a daily summary of the Gate reports (gate activity) including daily grand totals of all information from the gate reports. This report provides an overview of the day's activity.
   i. Exception Transaction Report: Shall provide all exception transactions in chronological order or by transaction type. Report shall be available for a selected time period.
   j. Daily and Monthly Activity Report: For each lane, provide a summary of activity type (load and chassis pickup and drops, exceptions, parking).
   k. Daily/Monthly Non-Revenue and Void Transaction Report: Shall provide all non-revenue and void transactions in chronological order, by type, for a specified time period. This report is used to audit gate transactions and verify accuracy by viewing associated transaction images.
   l. Monthly Summary Report: Provide a monthly summary of daily activity including all of the features listed in the Daily Summary Report. This report is used for auditing and management planning.

m. Monthly Lane Volume Report: Shall provide entry and exit counts by date. This report is used for management planning and statistical information.
n. Monthly Duration Report: Shall provide duration of stay based on users' elapsed occupancy time from time of entry for each stall. Assists in providing facility usage analysis, management planning, rate analysis and revenue analysis.
o. Monthly Stall Length Value Report: Provide a listing of leased stalls and associated revenue summarized by stall length and available power connections.
p. Outstanding Stall Report: Provides a list of available stalls for lease or short-term rental.
q. Waiting List Report: Provide list of all Waiting Lists and duration on each list for each user on the list, and historical lists.
r. Pricing List: Provide list of current prices for stall rental, and historical prices.

2. These reports shall be configurable by:
   a. Terminal.
   b. Parking Area.
   c. Carrier.
   d. Driver.
   e. Dates.

3. The system shall have the ability to generate or export the reports in PDF, CSV, and MS Excel formats. Retrieval shall be based upon user-defined parameters.

2.2 SYSTEM REQUIREMENTS / NON-FUNCTIONAL REQUIREMENTS

A. Look and Feel:

1. The SPS shall have a consistent look and feel with other Port apps and website in the opinion of the Port.
2. The SPS shall be branded with the Port and ACTC names and logos.
3. The SPS shall use terminology commonly utilized by the trucking industry.

B. Usability:

1. The SPS shall be capable of being used within a common standard Internet browser (IE, Firefox, Google Chrome, Apple Safari), tablet, or smartphone device, and not specific to any one browser or device.
2. The SPS shall have a straightforward and intuitive design in the opinion of the Port that enables general users and carriers to make effective use of the app and website with no training.
3. The SPS shall utilize commonly understood icons and objects instead of text where feasible in the opinion of the Port.

C. Performance:

1. Capacity:
   a. The SPS data warehouse repository shall be hosted on a commonly accepted relational database service in the cloud.
   b. The SPS data warehouse shall utilize commonly understood icons and objects instead of text where feasible.

2. Response Time:
    a. The SPS shall provide current information in real-time (i.e., data is no more than 10 minutes old), or as available from integrated data sources based on a 90 percent threshold (i.e., the performance requirement specified here is that the indicated functions will take less than the indicated length of time an average of 9 out of 10 times).
    b. The SPS shall be accessed within 3 seconds on 90 percent of all attempts.
    c. The SPS login shall not exceed 10 seconds on 90 percent of all attempts.
    d. The SPS time for a user to load any view (except a map or camera view) shall not exceed 3 seconds based on 90 percent of all attempts.
    e. The SPS view or refresh rate for the largest map shall not exceed 15 seconds based on 90 percent of all attempts.
    f. The SPS view or refresh rate for a camera feed shall not exceed 15 seconds.
    g. The SPS shall provide live streaming of camera feeds from cameras in the parking area. The feeds shall be routed through the ATMS and made available to the parking operators, gate agent and port staff.
    h. The SPS shall generate a user defined performance report within 15 seconds based on 90 percent of all attempts.
    i. The SPS shall not let its performance and operation be impacted adversely by the malfunction, removal, or addition of interfaces.

3. Reliability and Availability:
    a. The SPS shall be available to users 24 hours per day, 365 days per year, with 99.5 percent up time.
    b. The SPS shall be reliable to industry standards and minimize system freezes, crashes, and failures.
    c. The SPS shall have automated hourly databased backups.
    d. The SPS shall have minimal maintenance needs.

D. Security:

1. The SPS shall protect personal data from unauthorized access.
2. The SPS shall protect proprietary information from unauthorized use.
3. The SPS shall protect proprietary systems from unauthorized access.
4. The SPS shall encode/encrypt the user's password.
5. The SPS shall protect against unauthorized access through the following user roles:
    a. Port community Guest Users.
    b. Port community Login Users.
    c. TMC/EOC Operators.
    d. System Administrators.

6. The SPS shall provide for multiple user levels with varying user privileges from view only to full access and editing privileges.
7. The SPS shall adhere to Port specific policies.

E. Documentation:

1. The SPS shall include a User's Guide for Port community and Guest users.
2. The SPS shall include a TMC/EOC Operators and System Administrators manual.

F. Training:

1. Two 90-minute outreach/training sessions shall be delivered to the Trucker Workgroup and PETF on how to use the SPS. Additionally, a training video that is compatible with YouTube shall be developed and provided to the Port.
2. Two four (4) hour hands-on training sessions shall be delivered to the Truckers and Carriers.
3. Two four (4) hour training sessions shall be delivered to Parking Operator and Port Staff.
4. Two four (4) hour hands-on training sessions shall be delivered to the System Administrators.
5. A four (4) hour review session shall be delivered to Port Staff and System Administrators at the end of the beta testing period and before public rollout to go over remaining questions.
6. The training presentations and material shall be in English.
7. Instruction shall cover equipment familiarization and systems operation. The minimum training is that which is necessary to bring those employees designated to the level of proficiency required for performing their respective duties.
8. The instructors shall be experienced and qualified to conduct all training sessions. The instructors teaching these courses shall be familiar with technical information and are able to utilize proper methods of instruction, training aids, audiovisuals and other materials to provide for effective training.
9. The Contractor is responsible for providing all training materials, all copies of training materials, training aids, audiovisual equipment and visual aids for the conduct of these courses.
10. All training materials are to become the property of the Port at the conclusion of training.
11. At the request of the Port, the Contractor shall provide additional training sessions at the contract price per session.
12. Training curricula shall meet all training requirements and indicate trainee prerequisite knowledge, course content, training time requirements, and who should attend.

2.3 INTEGRATION AND DATA

A. External System Integration:

1. The SPS shall be capable of interfacing with the existing/planned RFID equipment and/or subsystem without extensive software modification.
2. The external system integration shall be able to interface and share data to/from the ATMS and GoPort App.
3. The external system integration shall be able to interface and share data to/from the RFID subsystem and/or equipment.
4. The SPS shall make use of existing communications infrastructure and standards.
5. The SPS shall have an architecture that supports an open Application Program Interface (API) for third-party software vendors to interface with the reservation, payment, and confirmation components of the SPS. The open API shall allow third-party software vendors to populate inputs that are available to general users on the main interface, as well as receive any outputs that are available to general users on the main interface (such as confirmations). The API library shall be included in the SPS main interface, such as on a pulldown menu "For Developers".

B. Data Hosting:

1. The SPS shall use a secure and reliable data host server, which the Port shall agree upon.
2. The SPS shall have a fallback data host server, and provide a comprehensive data archive, backup, and recovery plan and the equipment and systems necessary to implement the plan.

C. Data Archiving:

1. The SPS shall archive all monthly summary reports generated by external subsystems, from external data sources.
2. The SPS shall include the date and timestamp when the data was collected and archived.
3. The SPS shall limit access to the archiving and reporting module by user and group-level security to ensure trusted access and in compliance with the Port's privacy policy.

D. Data Reporting:

1. The SPS shall provide for automated logging and reports by all users.
2. Data stored in the SPS shall be available for at least 3 years for data reporting and analysis.
3. Monthly reports and other performance measure reports developed by the SPS shall be stored indefinitely.

E. Data Sharing:

1. An Application Programming Interface (API) in XML format shall allow software from public agencies or private companies to retrieve data from the SPS.

2.4 SUPPORTING HARDWARE

A. SPS SERVER

1. The SPS server shall:
    a. Provide processing capacity that meets or exceeds the capacity necessary for all functionalities described within this specification for software.
    b. Meet or exceed the reliability parameters described within this specification for software.
    c. Be housed physically within the Port's facilities, at a location that is selected by the Port or hosted using a cloud-based solution.
        1) If the Port decides to store SPS system data in-house instead of in the cloud, all servers and associated racks and other hardware shall be installed at designated locations as per the Port's explicit instruction.
    d. Be capable of regular backup transfers that can be customized by the Port.
    e. Be connected to the Port's designated Disaster Recovery site, as defined by the Port.
    f. Be compatible with all other IT assets that are required in order for the server to operate properly.
        1) IT assets that require upgrade in order to be compatible with the SPS server shall be paid as part of this Specification.
    g. Be physically expandable to add future capacity and storage.
    h. Be capable of successfully transferring data to a storage device for long-term reporting.

1) The Port may specify a preferred existing data storage site in lieu of creating new storage on the SPS server.

i. Consider the following minimum hardware concept requirements:
   1) 2400MT/s RDIMMs Memory Slots.
   2) Dual, Redundant Power Supplies.
   3) High-speed network data card.
   4) Modular design for easy part replacement.
   5) Properly sized uninterruptible power supply (UPS) units.
   6) Monitor and printer.

2. For hardware solutions that are not cloud-based, the SPS server should consider the following hardware requirements:
   a. Rack Server Configuration.
   b. 2 Intel Xeon E5-2620 v4, 2.1 GHz, 20M Cache, 8.0 GT/s QPI, Turbo, HT, 8C/16T (85W) Max, Memory 2133MHz.
   c. 2 CPU Standard Processor Thermal Configuration.
   d. 2400MT/s RDIMMs Memory.
   e. PCIe Riser with:
      1) One x16 PCIe Gen 3 FH slot.
      2) One x16 PCIe Gen3 LP slot.
   f. 32GB RDIMM, 2400MT/s, Dual Rank, x4 Data Width Memory Capacity.
   g. RAID 5 Configuration.
   h. 1 TB 7.2k RPM SATA 6Gbps 2.5-in. Hot-Plug Hard Drive.
   i. On-Board Broadcom 5720 Quad Port 1Gb LOM Network Card.
   j. Internal SD Module.
   k. Performance BIOS Settings for Power Management.
   l. Standard North America 10-ft Power Cord.
   m. Dual, Hot-Plug Redundant Power Supply (1+1).
   n. Windows Server 2016 Operating System, Factory Installed.
   o. Microsoft SQL Server 2016, Standard, OEM.

3. Contractor is ultimately responsible for procuring an SPS server that allows the SPS software to meet the minimum performance requirements and functions.
   a. Shop drawing should include a manufacturer's or contractor's certification that the server meets the requirements of the SPS software.
   b. Necessary enhancements to modify the server after procurement to meet these requirements shall be documented to the Alameda CTC and paid for as part of this Specification.

4. SPS Server shall be reviewed while in operation by the Port in order to determine acceptance. Contractor shall submit a testing plan and approval checklist for Alameda CTC review and approval prior to commencement of hardware testing.

B. IT NETWORK

1. Contractor shall review the Port's IT network prior to installation in order to verify that the proper communications channels can be established between the SPS server and users.
2. Contractor shall submit written requests to review IT architecture in person to the Alameda CTC at least 15 business days prior to the proposed visit, unless otherwise allowed.

PART 3 - EXECUTION

3.1 IMPLEMENTATION

A. The Contractor shall consider the following Project stages for implementation of the SPS Project:

1. System Design Review.
2. Functionality Acceptance Test.
3. Training.
4. Installation.
5. System Acceptance Test.
6. Operability Period Test.
7. Maintenance and Operations Support.

B. All submittals shall be provided in electronic format as well as hardcopy. File formats for electronic copies shall be subject to Alameda CTC's approval. Current version, industry-prevalent software shall be utilized for preparing all submittals.

C. As part of the System Design phase, the Contractor shall identify any risks or issues that may arise related to existing conditions at Port and regional facilities. Status of risks identified, and documentation of site visits shall be provided in the monthly progress reports submitted by the Contractor.

D. The Contractor shall only proceed from one phase of the Project to the next following written approval from the Alameda CTC.

E. Tests will take place at the Port's facilities, following test procedures developed by the Contractor to test the SPS functional requirements. Test plans shall be submitted to the Alameda CTC within minimum 21 days prior to the planned start of testing. Each test plan shall include the following elements:

1. A statement of the purpose of the tests.
2. The location, date(s) and time(s) tests will be performed.
3. Staff required to perform the test.
4. If applicable, the quantity of units to be tested.
5. The test equipment to be used, identified by manufacturer and model number.
6. A step by step description of the procedure to be performed.
7. Specific pass/fail criteria for each test.
8. A sample of the form(s) to be used to record test data.

F. Each test form shall include the following information:

1. Test title.
2. A table to record inspections performed for each functionality tested.
3. An indication that the functionality has passed or failed each individual test.
4. A line for signature of the person performing the test and date.
5. A line for signature of the Project Manager and date.
6. A line for signature of Alameda CTC representative witnessing the test.
7. Configuration of the software tested.

G. Testing shall not commence until the plans have been approved by the Alameda CTC. Test plans approval will be based on the Alameda CTC validation that they will collectively serve to fully demonstrate all requirements.

H. Upon completion of any test the Contractor shall prepare and submit within 10 days, a report summarizing the results with relevant test records and any actions required by the Contractor or the Alameda CTC. One original and electronic copy of the test results shall be submitted. The original of the test results shall contain the original test forms filled out by the testers performing the tests and original signatures. Each set of test results shall include the following information:

1. The complete test procedures used.
2. The completed, signed test forms.
3. If applicable, summary of the test indicating features and functionality tested and a statement of the remedy to be applied for failed tests.

I. Test failures, system defects, system errors or missing functionality shall be recorded by the Contractor and assigned a "Defect Severity" rating as follows:

1. Severity 1: Required functionality is substantially not available; normal in-service operation of the device or system cannot be maintained.
2. Severity 2: Functionality is substantially available however one or more subfunctions are not operating as specified; full functionality is available, but performance is not within specifications. Normal in-service operation can be maintained via workload.
3. Severity 3: Minor software defect or usability problem for which there is a fix or workaround.

J. All Severity 1 and 2 defects shall be corrected prior to completion of the stage of testing where they were identified. Test results for that stage shall not be accepted until such time as the Contractor demonstrates that all Severity 1 and 2 defects have been resolved or tested.

K. Severity 3 defects may be carried forward into software or system modifications in the next stage of the Project and shall be demonstrated to be corrected in the next planned testing stage.

L. Factory Acceptance Testing (FAT) shall be performed to ensure that the supplied and developed components meet all functional requirements and specifications.

1. FAT shall be performed using the final hosted environment.
2. Tests shall be performed at the Alameda CTC or the Contractor's manufacturing or development site.

M. System Acceptance Testing (SAT) can only be initiated once all the system elements have been installed and configured and all pre-installation and installation tests have been successfully completed.

1. The SAT looks at the entire system, and tests are completed to ensure that the overall functional requirements are met.
2. The SAT is typically done from the central system software out to each device and is also known as an end-to-end test.
3. Where software interfaces with other software, this interface shall be tested through the SAT for each piece of software.

N. The Operability Period Testing (OPT) is a 30-day performance test initiated once the SAT has been completed.

1. Through the OPT, the system is tested under full operations with full scale deployment to ensure that the performance requirements are met, and to measure the system reliability and availability.
2. System failures will result in restart of the OPT.

O. The Contractor shall perform all testing to satisfy the objectives of each testing stage as per the Alameda CTC's approved test plan.

3.2 INSTALLATION

A. The installation plan and installation procedures shall be submitted to the Alameda CTC for approval at least 30 days prior to installation for review and commenting.

1. The installation plan shall include Product Submittals for each major piece of software that the Contractor intends to furnish.
2. Each submittal shall contain sufficient information to determine that the system component complies with the Requirements.
3. Actual values of all specified parameters shall be listed; a simple statement that the product complies will not be sufficient.
4. All closely related products shall be submitted as a single package.

B. Alameda CTC's representatives shall be present during the onsite installation to monitor quality control of the installation process.

C. The Contractor shall be responsible for the installation, local configuration, network configuration, commissioning, and testing of all central computer system equipment at the hosting facility.

D. Project Team:

1. The scope, duration and size of this Project require the Contractor to create an effective Project Management team to ensure the success of the work. All key Project team members shall remain on the Project until completion of the Project. The Project team shall include at least one individual for each of the following positions:
   a. Project Manager.
   b. Software Architect.
   c. System Analyst.
   d. System Engineer.
   e. Front-end Developer.
   f. Back-end Developer.
   g. System Administrator / Hosting Engineer.
   h. Test Engineer.

2. The Contractor shall assign a Project Manager, who shall be highly responsive to the needs of the SPS Project as required in these Requirements and subject to Alameda CTC acceptance.

a. The Project Manager shall coordinate design and engineering activities and provide a technical liaison to the Alameda CTC.
b. This person shall be highly competent and fully qualified in all aspects of the SPS Project and must demonstrate experience in Project or technical management in at least 2 other projects involving similar software projects.
c. The Project Manager shall be identified to the Alameda CTC in the proposal.

3. The Project Manager shall have the contracting authority to issue and approve purchase orders and to bind the Contractor contractually.
   a. The Project Manager shall have the authority to assign and schedule Contractor personnel to perform all of the work required by these Requirements, and act as Contractor's representative for dispute resolution.
   b. The Project Manager shall provide a single point of contact for the Alameda CTC to resolve all issues related to the SPS Project.
   c. The Project Manager shall be responsible for directing all Subcontractors' designs and work.
   d. The Project Manager shall provide weekly Project status reports to the Alameda CTC staff and hold monthly status meeting with Port key staff.

4. The Project Manager shall have a full and complete understanding of the SPS Requirements and the Alameda CTC and stakeholder needs to provide adequate direction for coordination of work.
   a. The Project Manager shall have at least five (5) years of experience in the implementation and/or management of software projects including website and app components.
   b. The Alameda CTC shall be the sole determinant of the suitability of the proposed Project Manager's qualifications.
   c. The Alameda CTC reserves the right to have the Project Manager replaced if these qualifications are not met.
   d. The Project Manager shall respond promptly to any reasonable Port request.
   e. Coverage of this requirement by any alternates shall be subject to approval by the Alameda CTC.
   f. The Project Manager shall be on-site during all significant Project events, as necessary to facilitate meetings, Project activities, and information flow between the Contractor and Port, and as requested by the Alameda CTC.

5. The Software Architect shall be identified in the proposal and shall be available to the Project within seven (7) days after NTP.
   a. The Software Architect shall act as a technical resource for coordinating all system design and implementation issues.
   b. The Software Architect shall check each technical submittal prior to its being sent to the Alameda CTC for approval.
   c. The Software Architect shall check any installations to assure quality.

6. The Software Architect shall have a complete understanding of the technical requirements of the Requirements and site conditions sufficiently to provide design direction and to determine compliance of the Contractor's design submittals and work.
   a. The Software Architect shall be experienced in software development including website and app components.
   b. The Software Architect shall have a minimum of five (5) years of experience in coordinating software development and administrative support activities.

c. The Alameda CTC shall be the sole determinant of the suitability of the proposed Software Architect's qualifications.
d. The Alameda CTC reserves the right to have the Software Architect replaced if these qualifications are not met.
e. The Software Architect shall be on-site during all significant Project events, as necessary to facilitate meetings, Project activities, and information flow between the Contractor and the Alameda CTC, and as requested by the Alameda CTC.

END OF SECTION