This master should be used by designers working on Port of Portland construction projects and by designers working for PDX tenants (“Tenants”). Usage notes highlight a few specific editing choices, however the entire section should be evaluated and edited to fit specific project needs.

SECTION 281300 – SECURITY ACCESS CONTROL SYSTEM

1. GENERAL
	* + 1. DESCRIPTION
				1. Provide all labor, products, and services required for the installation, programming, checkout, and testing of a physically complete and fully functional extension of the existing security access control system (SACS) as described herein and as shown on the drawings.
			2. RELATED WORK SPECIFIED ELSEWHERE
				1. Division 26, Electrical
				2. Section 271000, Structured Cabling
				3. Section 280800, Integrated Airport Security System Performance Verification Testing
				4. Section 282300, Video Surveillance
				5. Section 283100, Fire Detection and Alarm
			3. SCOPE OF WORK
				1. Security Access Control System:

General: Portland International Airport’s existing SACS is manufactured by AMAG G4S and consists of a Symmetry Enterprise Homeland Security v8.0.2 headend, access control panels, contactless smart card readers, and ancillary field devices. The existing SACS shall be expanded to incorporate the new portals to be installed as part of this work. Work shall include installation of new conduit, raceways, cabling, field devices, software, controllers, electrical door hardware, and all other equipment required for a fully functional and physically complete SACS.

The new SACS controllers shall communicate over an Ethernet local area network (LAN) installed by others.

Provide all required software licenses and programming, to include SACS alarm video call-up, graphical map development, and application programming of the new SACS controllers. After completion of all required programming and testing the SACS software will be installed by the Port on a Port-provided virtual machine (VM) environment. All VM software and hardware will be provided by the Port.

* + - * 1. Provide products and perform installation, programming, testing, and debugging of the system as required to ensure a fully integrated, functional, and operating system expansion.
				2. Provide system documentation and submittals.
				3. Provide warranty and maintenance support.
				4. Comply with codes, ordinances, regulations, and other legal requirements of public authorities which bear on the installation and performance of the work.
				5. Provide all related demolition, cutting, and patching in accordance with the contract documents.
				6. The system shall consist of the following major components:

Security management software licenses.

Access control panel – edge controller.

Access control panel – high density controller.

Access control panel – elevator controller.

Biometric fingerprint reader.

Contactless smart card reader with keypad.

Request-to-Exit button.

Emergency door release pull station.

Duress alarm switch.

Audible device.

Interface termination box.

Electrical door hardware.

Power supply.

Key switch.

Surge protection.

Cable, wire, and connectors.

* + - * 1. Port-furnished and Port-installed software and equipment:

VM software and hardware.

Storage area network (SAN) including hardware, software, and programming.

Verint Video Surveillance System (VSS) including hardware, software, software licenses, (Verint only) and programming.

Local Ethernet network including labor associated with the copper and fiber patching within network rooms. Patch cords will be furnished in accordance with Section 271000.

* + - 1. REFERENCES
				1. ANSI: American National Standards Institute
				2. CFR: Code of Federal Regulations:

CFR Title 49, Chapter II, Subchapter C, Part 1542

47 CFR 15 et seq.: Radio Frequency Devices

* + - * 1. IBC: International Building Code
				2. IFC: International Fire Code
				3. NFPA: National Fire Protection Association

NFPA 70: National Electrical Code (NEC)

NFPA 101: Life Safety Code

* + - * 1. NIST: National Institute of Standards and Technology

FIPS PUB 201: Personal Identity Verification (PIV) of Federal Employees and Contractors

* + - * 1. TIA/EIA: Telecommunications Industry Association/Electronics Industry Association

EIA-310-D: Cabinets, Racks, Panels, and Associated Equipment

TIA/EIA-568-B: Commercial Building Telecommunications Cabling Standard

* + - * 1. UL: Underwriters Laboratories Inc.

UL 294: Standard for Safety for Access Control System Units

* + - 1. SUBMITTALS
				1. Submit product data and obtain Port approval prior to development of the Contractor’s shop drawings. Shop drawing submittal shall include all drawings detailed herein. Separate submittals shall not be acceptable unless authorized by the Port.
				2. System Description and Analysis: Complete system descriptions, analyses, and calculations used in sizing the equipment required by the specifications. Descriptions and calculations shall show how the equipment will operate as an existing system expansion to meet the performance of this specification. The submittal shall include the following:

Product Data Submittals:

Submit catalog cut sheets, technical data sheets, manufacturer specifications and/or diagrams necessary to illustrate a product, material or system for the work. Product data literature is required on all items of material and equipment and should be clearly marked; identifying specific items proposed with a reference to the specification requirement for which the item is being submitted.

Product data shall include adequate descriptive literature and catalog cut sheets required for the Port to ascertain that the proposed equipment and materials comply with specification requirements.

* + - * 1. Drawings:

System block diagrams.

System riser diagrams.

Point-to-point color-coded wiring diagrams.

Floor plans detailing device locations.

Equipment room layouts to scale.

Door Rough-in Details. Contract drawing door details shall be utilized and modified for site-specific conditions based on field survey by the Contractor. Details in AutoCAD will be provided for use by the Contractor.

Installation of SACS equipment in consoles, cabinets and racks, including wiring diagrams and rack elevations.

Installation of SACS equipment located in the equipment rooms, including wiring diagrams and rack elevations.

Surge protection device installation details.

Sequence of operations for each security door and gate type.

Details of interconnection to fiber optic backbone system.

Details of interconnection to security local area network (LAN).

Prepare using AutoCAD.

* + - * 1. Graphics: Project-specific examples of graphics to be utilized for the SACS Management and Alarm workstations graphical user interfaces (GUIs). This shall include all GUI maps to be developed or updated as part of the system expansion.
				2. Record Shop Drawings: Provide a copy of corrected, approved shop drawings for the work, updated to show as-constructed conditions. Plans shall indicate exact device locations, panel terminations, cable routes, and wire numbers as tagged and color-coded on the cable tag. Final point-to-point wiring diagrams of each type of device shall be included in the as-constructed drawings. Prepare as-constructed drawings in accordance with Section 013300.
				3. Warranty Information: All materials relating to warranties.
				4. Manufacturer’s training certifications of service personnel.
				5. Manuals:

Provide complete sets of manuals and other information necessary for the operation and maintenance of the system in accordance with Division 1 requirements.

Manuals: Manuals shall include names, addresses, and telephone numbers of each subcontractor installing equipment and systems, and nearest service representatives for each item of equipment for each system.

The manuals shall have a table of contents and tab sheets.

Tab sheets shall be placed at the beginning of each chapter or section and at the beginning of each appendix.

The final copies delivered after completion testing shall include all modifications made during installation, checkout, and testing.

Design Manual: Design manual shall identify the operational requirements for the system and explain the theory of operation, design philosophy, and specific functions. A description of hardware and software functions, interfaces, and requirements shall be included for all system operating modes. Submit design manual with product data submittal.

Operator’s Manual: The operator’s manual shall describe all equipment furnished, including general hardware operations, description, and specifications.

Software Manual: The software manual shall describe the functions of all software, and shall include all other information necessary to enable proper loading, testing, and operation, including:

Description of required sequences.

Description of complete GUI functionality including but not limited to the following:

Icon sequence of operation.

Graphical hierarchical map operation.

VSS interoperability.

List of all software licenses.

Maintenance and Service: The maintenance manual shall describe maintenance for all equipment including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective components. Manufacturer’s repair manuals shall include the SACS equipment physical layout and schematics to the component and device level.

Operation and maintenance manuals shall be fully corrected to include review comments prior to final submission to the Port.

Consultants: Coordinate training requirements with the Port depending on project size, scope, and complexity. Edit required hours and sessions accordingly.

* + - 1. TRAINING
				1. System Overview: Conduct an on-site system overview for the Port and end users (separate from the systems testing) of the SACS to instruct the users on the scope and operations of the systems.
				2. Provide on-site training by a qualified, factory-trained instructor for designated maintenance technicians and operations personnel on the operation and maintenance of the system(s). If trained personnel from the factory are required for training, they shall be provided onsite by the Contractor at no additional cost to the Port.
				3. Provide the following training upon completion of final testing and acceptance of the systems:

Demonstrate operation of system during system overview tour. Demonstrate the system in all modes of operation.

Provide a minimum of 8 hours of system maintenance training to designated Port personnel. Classes shall accommodate up to five students at one time. Provide multiple classes at two different times to accommodate the Port’s ability to maintain ongoing maintenance support of the Port facilities.

Maintenance training shall cover all technical training required for maintenance, preventative maintenance and system adds, moves and changes including detailed instructions on system software modifications.

* + - * 1. Provide a minimum of 8 hours of operator training to the Port’s Communications Center operators. Classes shall accommodate up to four students at one time. Provide two separate courses to accommodate separate operator shifts.
				2. Provide minimum of 8 hours of operator training to the Port security personnel. Number of classes and class dates and times shall be coordinated with the Port. Provide multiple classes at different times to accommodate the Port’s ability to maintain ongoing support of the Port’s security operations.
				3. Provide course syllabus for all training courses in advance of each course, with outline of topics, time allotted for each topic, targeted audience, and training objectives. Submit training manuals to Port for review and approval a minimum of 21 working days in advance of scheduled training. Training shall not commence until training syllabus has been approved.
			1. QUALITY ASSURANCE
				1. The equipment manufacturers shall have been in business manufacturing similar products for at least 10 years.
				2. Equipment shall be installed by qualified individuals having at least 5 years of experience installing and maintaining similar equipment. The qualified individuals shall have installed at least three systems of similar type and size within the past 5 years. Submit evidence of successful installation, owner training and maintenance for a minimum of the previous five years. Provide listing of projects with verifiable references with names and telephone numbers.
				3. The Contractor shall be a factory-authorized and trained dealer of the system at time of bid and shall be factory-trained and certified to install and maintain/repair the system after system acceptance. The Contractor shall maintain a fully staffed office within 2 hours’ travel time from the work site.
				4. Personnel:

Service personnel shall be qualified to accomplish all work promptly and satisfactorily.

Service personnel shall have attended the manufacturer’s training school(s) for equipment being serviced. Provide certificates of completion or other documentation showing manufacturers’ certification.

Notify the Port in writing of the name of the designated service representative and of any change in personnel.

* + - 1. WARRANTY, MAINTENANCE, AND SERVICE
				1. The warranty, maintenance, and service period shall commence in accordance with the General Conditions and shall not be a function of material delivery dates.
				2. Warranty service shall be provided by a trained specialist of the equipment manufacturer.
				3. On-site warranty response time shall not exceed 2 hours. If the Contractor fails to respond to the service request within the specified time, the Port shall have the right to repair the system without invalidating the warranty. In the event the Port performs repairs because of the Contractor’s failure to respond the Contractor will be charged for the repair cost and the established warranty shall remain intact.
				4. Provide all system maintenance required by the system manufacturers as well as quarterly on-site preventative maintenance. In addition, provide the following additional services:

Include in the maintenance and warranty the yearly software maintenance agreement costs for SACS licenses for all system software installed under this project for the duration of 12 months from substantial completion. Software upgrade costs shall include all required license fees and software upgrade costs including on-site installation labor. There shall be no additional costs to the Port for implementation of upgrades as the result of the release of new software versions or patches.

* + - * 1. Service/Maintenance:

System maintenance and repair workmanship defects during the warranty period shall be provided by the Contractor free of charge (parts and labor).

Engage the installer to correct any system defect within 2 hours of receipt of call from the Port.

Extended service/maintenance agreements shall be offered by the Contractor for up to 4 years after the warranty expires. The agreement shall be renewable quarterly, or yearly. Submit 90 days prior to final inspection.

* + - * 1. Inspections: Perform two inspections accompanied by Port maintenance technicians at 6 month intervals, or more often if required by the manufacturer(s). Coordinate inspections with the Port 72 hours in advance. This work shall be performed during regular business hours, Monday through Friday, excluding federal or state holidays. These inspections shall include:

Visual checks and operational tests of the system.

Perform diagnostics on all equipment as needed.

Resolve previous outstanding problems.

* + - * 1. System Operation Verification: Performance of scheduled adjustments and repair shall include verification of operation of the system as demonstrated by the applicable tests of field devices and equipment.
				2. System Modifications: Make all recommendations for system modifications in writing to the Port.

No system modifications, including operating parameters and control settings, shall be made without prior approval of the Port’s designated representative.

Modifications made to the systems shall be incorporated into the operations and maintenance manuals, and other documentation affected.

* + - 1. KEY LOCKS
				1. Locks installed on all system enclosures including interface termination boxes (ITBs) shall be equipped with a Schlage Primus cylinder and housing and shall accept a Port-furnished lock core.
				2. Construction Locks: If the Contractor requires locks during installation and construction, a set of temporary locks shall be used, with three keys provided to the Port.

Add, edit, and/or delete the product data articles as appropriate.

The brand name exemption for AMAG expires December 31, 2020.

1. PRODUCTS
	* + 1. ACCEPTABLE MANUFACTURERS
				1. Product Basis of Design:

Security Management System (SMS) Software: AMAG Symmetry Enterprise Homeland Security Edition v8.0.2, no substitutions. Provide all required licenses, to include but not be limited to, reader and camera channel licenses for the new cameras installed as part of this work.

Access Controller: AMAG EN2DBC, AMAG M2150-ELEV-HSE Series Controller (elevator control only) and M2150 Series Controller (at locations shown on the drawings), no substitutions.

* + - 1. GENERAL SYSTEM REQUIREMENTS
				1. The system and all components shall be UL listed and shall meet the requirements of UL 294.
				2. Graphical Site Maps:

Drawings in AutoCAD (.dxf) format will be supplied by the Port for use in the development of the graphical maps (see Part 3 of this section for more information).

Maps shall have the ability to be configured to appear automatically on presentation of a new alarm, providing the operator with prompt visual indication that an alarm has occurred.

The status of card readers, doors, input points and auxiliary outputs shall be requested from any map by simply selecting the icon representing the device allowing its current state to be displayed.

The icons on the graphic maps shall dynamically indicate the status of the device they represent. For example, a door icon shall change state to depict the door open when the door position sensor indicates such, and the icon shall change to the original state when the door is again secure. Monitor points shall also change to show their current state.

The operator shall have the ability to change the current state of a control point by pressing the right mouse button which will cause the appropriate command options list to appear for selection. Having selected a command, confirmation shall be provided by reflecting the change in status on the display.

Coordinate fire sprinkler zone interface requirements with Section 283100. The SACS power supply circuits to individual edge controllers are to disconnect power to the security portal via activation of a fire alarm control module on a per sprinkler zone basis. Refer to the latest version of the Port’s fire alarm system maintainable drawings and Life Safety Master Plan.

* + - 1. FIRE ALARM INTERFACE
				1. Fire System Interface: The system shall satisfy all requirements of NFPA 101.7.2.1.6.1 Delayed Egress Locks and 101.7.2.1.6.2 Access-Controlled Egress Doors. Loss of power to access control system controller that locks the doors shall automatically unlock the doors.
				2. Activation of the building fire-protective signaling system, automatic sprinkler, or fire detection system shall automatically unlock the doors and the doors shall remain unlocked until the fire-protective signaling system has been manually reset. In accordance with NFPA 101, activation of manual fire alarm pull stations shall not unlock the access controlled doors.
			2. ACCESS CONTROL PANEL – EDGE CONTROLLER
				1. General: The access control panel (ACP) shall be a single unit with integral card reader, input and output connections. Edge controllers shall be AMAG model EN2DBC, no substitutions.
				2. The ACP shall store firmware in non-volatile flash memory to allow for updates via the SMS head-end software application. The ACP shall store the cardholder and configuration database information in battery-backed up memory so that loss of primary power will not cause the loss of the database. Access granted or denied decisions shall be made in under 0.5 seconds.
				3. The ACP shall have the following characteristics:

Card Reader Ports: Two.

Inputs Supervised: Four general purpose (2/3/4/6 state supervision).

Inputs Canned: Two door monitor, two request-to-exit.

Outputs: Two general purpose.

Outputs canned: Two door lock.

UL294 and RoHS compliant.

Communications: Ethernet (10/100 Base-T), 256 AES encryption.

Card Type: MIFARE DESFire EV1.

Power: 12 VDC, PoE+.

* + - * 1. Four-state supervision shall be utilized for the work. Provide all required end of line resistor packs to be installed at the end device.
				2. The ACP shall be provided with all enclosures and power supplies as required for a physically complete and fully functional system as specified herein and detailed on the drawings.
				3. ACP Power Supply: The dedicated controller power supply (located within the network room) shall be powered via a 120 VAC uninterruptible (UPS) circuit or have standby batteries that are capable of running the system during AC power interruptions for not less than 8 hours. It shall be recharged by a charging circuit incorporated into the controller power supply board.
				4. Access controller shall have on-board memory to support cardholder populations of at least 90,000 without the need for additional hardware, software, or licenses.
				5. FASC-N Data: The access controller shall have the ability to support the storage of FASC-N data. The cardholder record in the controller shall include each field of the FASC-N data (as defined in FIPS 201 and supporting documents NIST SP800-73-1 and NIST SP800-78). Agency code, system code, and credential number shall not be linked. The access controller shall interface with the card reader in a manner that provides all of the FASC-N data fields (as defined in FIPS 201 and supporting documents NIST SP800-73-1 and NIST SP800-78) from the card to the controller.
			1. ACCESS CONTROL PANEL – ELEVATOR CONTROLLER
				1. Provide access controllers specifically manufactured for elevator control. The system shall have the ability to provide elevator access control via the following means:

The use of a card reader to activate the elevator call button.

The use of a card reader in the cab to activate the correct floor selection button.

A combination of both of the above functions.

* + - * 1. AMAG M2150-ELEV-HSE Elevator Node (40,000 cards), no substitutions.

Consultants: Use of the ACP detailed in the following article to be approved by the Port on a per project, per location basis. The intent is to utilize this ACP at locations such as automated vehicle gates and where there is a need for large input/output requirements.

* + - 1. ACCESS CONTROL PANEL – HIGH DENSITY CONTROLLER
				1. General: The access control panel (ACP) shall be comprised of modular components that connect over standard interfaces to one another. ACPs shall be AMAG MultiNODE 2150 series, no substitutions, provided with all required, auxiliary input, output, and reader modules.
				2. The ACP shall store firmware in non-volatile flash memory to allow for updates via the SMS head-end software application. The ACP shall store the cardholder and configuration database information in battery-backed up memory so that loss of primary power will not cause the loss of the database. Access granted or denied decisions shall be made in under 0.5 seconds.
				3. The ACP shall have the following characteristics:

Card Reader Ports: 2/4/8 expandable to 16.

Inputs Canned: Door monitor and request-to-exit. Quantity dependent on number of card readers.

Outputs Canned: Door lock. Quantity dependent on number of card readers.

Inputs Supervised: 4/8 general purpose (2/3/4/6 state supervision) via plug-in modules, expandable to 48 via external modules.

Outputs: 4/8 general purpose via plug-in modules, expandable to 48 via external modules.

UL294 and RoHS compliant.

Communications: Ethernet (10/100 Base-T), 256 AES encryption.

Card Type: MIFARE DESFire EV1.

Power: 12 VDC.

* + - * 1. Four-state supervision shall be utilized for the work. Provide all required end of line resistor packs to be installed at the end device.
				2. The ACP shall be provided with all enclosures and power supplies as required for a physically complete and fully functional system as specified herein and detailed on the drawings.
				3. ACP Power Supply: The dedicated controller power supply (located within the network room) shall be powered via a UPS 120 VAC circuit or have standby batteries that are capable of running the system during AC power interruptions for not less than 8 hours. It shall be recharged by a charging circuit incorporated into the controller power supply board.
				4. Access controller shall have on-board memory to support cardholder populations of at least 20,000 without the need for additional hardware, software, or licenses.
				5. FASC-N Data: The access controller shall have the ability to support the storage of FASC-N data. The cardholder record in the controller shall include each field of the FASC-N data (as defined in FIPS 201 and supporting documents NIST SP800-73-1 and NIST SP800-78). Agency code, system code, and credential number shall not be linked. The access controller shall interface with the card reader in a manner that provides all of the FASC-N data fields (as defined in FIPS 201 and supporting documents NIST SP800-73-1 and NIST SP800-78) from the card to the controller.
			1. CONTACTLESS SMART CARD READER WITH PIN PAD WITH LCD
				1. AMAG Model S844, no substitutions, with the following characteristics:

Communications: Bi-directional supervised MCLP communications, Wiegand communications not acceptable.

Credential: MIFARE DESFire EV1.

Color: Black.

* + - 1. BIOMETRIC FINGERPRINT READER
				1. Provide biometric fingerprint readers with integral smart card technology at locations shown on the drawings.

Power: 12 VDC.

Environmental: IP65.

Communications: Provide with both a Wiegand (ACP Communication) and Ethernet (IT interface) connection.

Biometric: Fingerprint.

Smart Card: MIFARE DESFire EV1.

* + - * 1. Biometric data shall be downloaded from the IDMS onto the Port’s contactless smart card. Upon presentation of the smart card to the reader the biometric fingerprint and card number data from the card shall be read by the reader and the fingerprint reader shall be enabled. After successful scan of the fingerprint the biometric data shall be locally compared and if it is a match the card number information shall be sent via a Wiegand signal to the access control panel. If the individual has the access rights to the portal, access shall be granted.
				2. The biometric fingerprint reader shall be connected to the access control panel via a Wiegand communications cable and to an Ethernet switch for power and remote connection for management and software updates.

The brand name exemption for Morpho expires April 30, 2021.

* + - * 1. Acceptable Manufacturer/Model: Morpho SIGMA Lite+ Series, Model No. 293678660, no substitutions, with the following characteristics:

1:3K user biometric identification (2 Finger + 1 Duress).

Fake finger detection.

2.8-inch touchscreen.

IP65 rated.

Optical sensor.

* + - 1. SURGE PROTECTION AND SUPPRESSION
				1. Provide surge protection on cabling for all exterior devices as follows:

Power 120 VAC – Ditek DTK120HW or pre-bid approved equal.

Cat 6: Provide in accordance with Section 271000.

Wiegand – Edco 5W8-30 or pre-bid approved.

Low Voltage – Edco FAS 1 and 2 Series or pre-bid approved equal.

Miscellaneous Circuits – Edco, Ditek or pre-bid approved.

* + - * 1. Provide surge suppression on all electric locks. Edco EL-EDS, or pre-bid approved equal.
			1. INTERFACE TERMINATION BOX (ITB)
				1. Provide interface termination boxes (ITB) at security portals to facilitate installation of the SACS edge controller, CAT 6 outlet and the interface terminal strip between electrical security door hardware devices and SACS devices. Enclosure shall have the following characteristics:

NEMA Type 1 hinged cover enclosure.

Construction: Steel.

Finish: ANSI 61 gray polyester powder coating outside, white enamel inside, over phosphatized surface.

Covers: Furnish with drawing/data pocket and laminated point-to-point colored wiring diagram. Submit sample of laminated wiring diagram to the Port for approval.

Cover Hardware: Provide key lock cylinder to accept Port-furnished Schlage 1 1/8-inch Primus cylinder. Key all enclosures alike.

Size: Minimum 14 inches high by 12 inches wide by 6 inches deep, unless otherwise approved.

Enclosure shall have an internal tamper switch. Tamper switch shall be plunger type with normally open dry contact switch with screw terminals for wire connection. Contacts shall be silver-plated. SECO-LARM, Model SS-072Q, or pre-bid approved equal.

Provide terminal strips on the back panels of each enclosure for interface to required devices and equipment. Number of terminal strips and configuration as shown on the drawings. Provide with the following characteristics:

Conductor Size: 22 to 10 AWG.

Color: Coordinate color(s) with the Port.

Labeling: Coordinate labeling convention with the Port.

Accessories: Provide power disconnect, end sections, circuit separators, jumper bars (all types), connector plates, shielding connectors, protection labels, markers, and all other accessories.

Installation: Provide pre-manufactured jumpers. Use of wire jumpers shall not be permitted.

Acceptable manufacturer: Allen Bradley Series 1492 or pre-bid approved equal.

Label all equipment termination enclosures with a white core laminated phenolic plastic label with white lettering on black background. Labels shall be permanently affixed to the enclosure. The white core laminated phenolic label lettering shall be UV resistant white on black background with 1"H X 4"W with Bold Arial 1/4-inch high text, all caps. Label shall be affixed to the enclosure cover with aluminum rivets or stainless steel screws in accordance with Section 260553. If screws are utilized apply clear silicone on interior screw penetrations. Coordinate and submit labeling information to the Port for approval.

The ITB assembly, including the controller (EN2DBC), terminal strips, internal wiring, tamper switch, etc., shall be assembled and certified by an Oregon-approved third-party evaluation firm.

* + - 1. Request-to-Exit button
				1. Release pushbutton shall be heavy-duty, normally for use with electromagnetic equipment; Rees 01371, or pre-bid approved equal.
			2. EMERGENCY RELEASE PULL STATION
				1. Emergency release pull station with key reset shall be Potter, Inc., Model RMS1T KL with PK625 key switch, or pre-bid approved equal The pull station shall be green in color with verbiage in English stating “DOOR RELEASE” on top of device and “EMERGENCY” on bottom.
			3. DURESS ALARM SWITCHES
				1. Provide duress buttons at locations shown on the drawings. Connect buttons to inputs on an access control panel provided as part of this Contract. United Security Products Model HUB2A, or pre-bid approved equal.
			4. ELECTRICAL DOOR HARDWARE
				1. Electromagnetic Lock:

Locks shall meet the requirements of ANSI A156.23.

Surface mounted, UL listed, dual voltage electromagnetic lock with the following characteristics:

Holding Force: 1,200 pounds.

Magnetic bond sensor.

Door position sensor.

Provide with required filler plates, angle brackets, adapter brackets, and other mounting accessories.

Acceptable Manufacturer/Model: Securitron Model No. M62BD, or pre-bid approved equal.

* + - * 1. Electric Strike:

Strike shall have the following characteristics:

Power: 12 or 24 VDC.

Operation: > 1,000,000 cycles.

Option: Dual monitor switch.

Acceptable Manufacturer/Model: Von Duprin 6000 Series, or pre-bid approved equal.

* + - * 1. Door Position Switch (DPS) – Surface Mount:

The surface mount DPS shall be utilized for baggage conveyor, oversize baggage, and overhead doors.

The DPS shall interface and be compatible with access controller.

The DPS shall detect a 3-inch or less of separating relative movement between the magnet and the switch housing.

Upon detecting such movement, it shall transmit a signal to the access controller.

The DPS shall consist of a switch assembly and an actuating magnetic assembly with the following characteristics:

Enclosure shall be anodized aluminum.

The magnet assembly shall house the actuating magnet.

Switches shall be rated for a minimum lifetime of 10,000,000 operations under dry circuit.

Housing (except concealed) shall have 3 feet of stainless steel armored cable to protect leads.

UL listed.

Spacers, as required for installation, shall be of nonferrous material.

Exposed fasteners shall be tamper resistant.

Fabricate mounts, adapters, etc., to fit existing conditions if off-the-shelf manufactured products are not available.

Acceptable Manufacturer/Model: GE Model 2505A, or pre-bid approved equal.

* + - * 1. Door Position Switch – Recessed Mount:

The recessed mount DPS is to be utilized at portal locations as detailed on the Contract Drawings.

The DPS shall interface and be compatible with access controller.

The DPS shall detect a .8-inch or less of separating relative movement between the magnet and the switch housing.

Upon detecting such movement, it shall transmit a signal to the access controller.

The DPS shall consist of a switch assembly and an actuating magnetic assembly with the following characteristics:

Enclosure shall be ABS plastic.

The magnet assembly shall house the actuating magnet.

The switch mechanism shall comprise one hermetically sealed form-C reed switch wired in single pull double throw (SPDT) configuration.

Switches shall be rated for a minimum lifetime of 10,000,000 operations under dry circuit.

UL Listed.

Acceptable Manufacturer/Model: GE Model 1076CW, or pre-bid approved equal.

* + - 1. POWER SUPPLY
				1. Provide power supplies as specified herein at locations shown on the drawings. For each location a separate power supply shall be provided and sized to support all required power. These power supplies shall supply power to doors, electrical hardware, field device, or other uses and shall be separate from the access controller power supply.
				2. Power supplies shall be equipped with integral battery back-up system capable of delivering normal operating power for a period of 8 hours under normal traffic at locations without 120 VAC UPS power.
				3. All required trickle-charging circuits shall be included in the scope.
				4. Power supplies shall be individually fused and configured with 25 percent spare capacity.
				5. Acceptable Manufacturer/Model: Altronix Maximal Model No. Maximal77D, or pre-bid approved equal.

Schlage brand name exemption for PDX, TTD, and HIO expires December 31, 2019. If project is not a PDX or GA airport location, replace “no substitutions” with “or pre-bid approved equal.”

* + - 1. KEYSWITCH
				1. Schlage 650 Series, no substitutions.
			2. AUDIO DEVICE
				1. Cooper Notification Series CH70-24-W, or pre-bid approved equal. Device color shall be white with no text.
			3. CABLE, WIRE AND LABELS
				1. General: Provide all wire and cable as recommended by the manufacturer. Wire and cable components shall be able to withstand the environment the wire or cable is installed in for a minimum of 20 years. Plenum or riser cables shall be ANSI-C2 CL2P certified. For exterior applications provide West Penn Aquaseal, or pre-bid approved equal.
				2. Power conductors shall be a minimum of 12 AWG.
				3. Labels: Brady PermaSleeve, or pre-bid approved equal. Label cables in accordance with the latest Port security device labeling standards to be provided to the Contractor upon request after award of contract.
1. EXECUTION
	* + 1. INSTALLATION
				1. General: Install all system components and appurtenances in accordance with the manufacturer's instructions, applicable codes, and the contract documents, and furnish all necessary interconnections, services, and adjustments required for a complete and operable system. Control signal, communications, and data transmission line grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation.
				2. All wiring, including low voltage wiring outside boxes and enclosures, which is not installed in a raceway or duct bank, shall be installed in EMT (electric metallic tubing) conforming to UL 797 or IMC/RMC (intermediate metallic conduit/rigid metal conduit) in areas susceptible to damage. Minimum size shall be 3/4-inch unless otherwise shown. Perform electrical work in accordance with Division 26. Grounding shall be installed as required by code or as necessary to preclude ground loops, noise, and surges from adversely affecting system operation.
				3. Maintain consistent color-coding and labeling for all wiring/cabling in accordance with the approved shop drawings. All wiring/cabling shall be labeled where terminated in cabinets, racks, enclosures, devices, etc.
				4. All equipment connected to alternating current circuits shall be protected from power line surges.
				5. Copper wire inputs and outputs shall be protected against surges induced on communication and device wiring.
				6. Installation of signal, communications, and control conductors shall adhere to the following:

Cables shall be dressed and tie-wrapped in all cabinets and/or at control panels and consoles to present a neat and orderly installation. At the discretion of the Contractor, cable duct may be installed in equipment cabinets and control consoles to facilitate satisfying this requirement.

Cables shall be secured to equipment cabinet backboards, console members, or to other system components using cable clamps and wraps. Furnish and install cable support posts if required to facilitate system installation.

All cables and/or conductors shall be terminated with approved cable termination connectors compatible with the specific termination.

* + - * 1. Mounting screws for all junction boxes, including pull boxes, and mounting of all devices shall be stainless steel type pinned Torx tamper proof screws. Size and thread type as required by manufacturer and back box type. Submit sample to the Port for approval.
				2. Provide a quantity of five tamper resistant tools of each type required for installation.
			1. DOOR MOCKUPS
				1. Install a door mockup of each door type to be constructed at existing security door locations. The mockups shall be comprised of all conduits, enclosures, cabling, device terminations, and labeling for inspection and acceptance by the Port.
			2. PROGRAMMING
				1. Provide all required application programming and configuration of the SMS. Programming shall include defining hardware, portals, monitor points, clearance codes, time codes, door groups, alarm groups, operating sequences, camera alarm video call-ups, and interfaces with the security subsystems for a complete and functional system as specified herein and shown on the drawings. Input of all program data shall be by the Contractor. Coordinate with the Port to determine the programming requirements. These requirements shall be detailed within the Contractor’s design manual submittal specified earlier in this section.
				2. Develop and input GUI graphical maps and screens. The Port will provide site and floor plan drawings in AutoCAD.dxf format as the basis for the creation of these maps. Customize these drawings to include the various security icons, CCTV camera icons, designators, etc., to depict the floor plans within individual buildings, floors, rooms, etc. Coordinate the development of the graphical maps with the Port. Development of maps shall include the editing of the files to delete superfluous data, creation of icons for all portals, monitor points, cameras, and tamper circuits. Scanned or blurred graphical maps shall not be acceptable. Coordinate the installation of the updated and/or new maps with the Port 30 days prior to cutover of the first security portal.
				3. The Port will be responsible for the creation of the new access groups. Coordinate requirement of the creation of any new access groups with the Port 30 days prior to cutover of the first security portal.
				4. Maintain worksheets which fully document the system program and configuration. Worksheets shall be kept up to date on a daily basis by the Contractor until final acceptance by the Port. Worksheets shall be subject to inspection and approval by the Port. Provide final copies to the Port prior to project closeout.
				5. Graphics: Create, develop, and install all graphics required to make the system operational.

Graphics shall have sufficient level of detail for personnel to operate the system and assess alarms.

Supply hard copy, color examples at least 8.5 inches by 11 inches in size, of each type of graphic to be used for the completed SACS.

Provide examples of the video annotation used for camera identification.

The graphics examples shall be submitted to the Port for review and approval at least 60 days prior to the Contractor’s scheduled need date.

* + - 1. SECURITY ACCESS CONTROL SYSTEM OPERATION

Consultants: Coordinate project-specific sequences of operation with the Port and incorporate into this section as required to meet the project needs.

* + - * 1. Connect new ACPs to existing access control system via network interface. New components shall be added to existing system and shall function as follows:

When a card is passed through a reader and the assigned personal identification number (PIN) code is entered, the system shall check to see that the card has not been listed as lost or stolen and shall verify the individual’s access authorization for the portal. If the card data and numeric code are valid, the system shall unlock the door for an adjustable time period from 2 to 20 seconds. If the card and PIN are not valid, an alarm shall be transmitted to all operators’ stations and the door shall remain locked. Entering the duress code shall trigger a silent alarm condition.

The system shall have a maximum response time under all circumstances of 2 seconds from the time the card is inserted in a reader and the assigned PIN is entered on the keypad to the time the door unlocks for a valid authorization.

The system shall monitor all card access controlled doors as required and approved by the Port. The system shall monitor whether the door is open or closed and shall transmit an alarm to all operators’ stations, and the local audible alarm at the respective door will sound if the door is forced open, unlocked due to a power failure, unlocked by the emergency release station, and/or if the door or gate remains open for an adjustable time period from 2 to 60 seconds, except as noted below. Both the alarm condition at the operators’ stations and the local audible alarm shall remain active until the door or gate is closed and secured, at which time the system shall automatically reset to normal.

All doors shall be equipped with an adjustable alarm delay feature which will delay sending an alarm condition to the communication center for a door left open too long. Under this operation, the local chime will sound first and, if the door is not closed within a predetermined amount of time, an alarm will be sent to the communication center.

* + - * 1. Emergency Exits:

All emergency exits with electromagnetic locks shall be provided with an emergency lock release pull station. The emergency release pull station shall be directly connected to the lock control system in a manner that de-energizes the power source to the lock when the emergency station is activated. The other pole shall be connected to sound the chime and trigger an emergency release alarm. Emergency alarm condition due to activation of the emergency station shall require resetting the emergency station at the door before the system can reset.

Emergency egress doors shall be interfaced with the fire alarm system to automatically release electric locks upon activation of fire alarm and fire sprinkler zones.

* + - 1. SYSTEM INTERFACES
				1. SACS interface to the VSS shall function as follows:

Upon receipt of a portal alarm by the SACS with cameras associated with it, the SACS shall send a command signal to the VSS defining camera numbers and the display numbers for which video is to be called up on to assist the operator in assessment and resolution of the SACS alarm. When an operator selects an alarm out of the queue, the SACS shall send a signal to the VSS which shall bring up video of the camera associated with the alarm on the SACS monitor. When multiple camera video is associated with an alarm all video for that alarm shall be multipexed onto the monitor screen. Upon acknowledgement of the alarm by the operator the SACS Monitor shall return to displaying no video.

Upon receipt of an alarm by the SACS the SACS shall send a command signal to the VSS. This signal shall contain the alarm time stamp to allow the operator to view 15 seconds of pre-alarm and 30 seconds of post alarm video for all cameras associated with the SACS alarm on the SACS Alarm Workstation.

* + - 1. STARTUP AND COMMISSIONING
				1. The Contractor shall not apply power to the SACS until after:

SACS equipment has been set up in accordance with manufacturer’s instructions.

A visual inspection of the SACS components has been conducted to ensure that defective equipment items have not been installed and that there are no loose connections.

System wiring has been tested and verified as correctly connected as indicated.

All system grounding and transient protection systems have been verified as properly installed and connected as indicated.

Power supplies to be connected to the SACS and equipment have been verified as the correct voltage, phasing, and frequency as indicated.

Satisfaction of the above requirements shall not relieve the Contractor of responsibility for incorrect installations, defective equipment items, or collateral damage as a result of Contractor work or equipment.

* + - 1. TESTING
				1. General: Perform factory testing, site testing, and adjustment of the completed SACS in accordance with the following:

Provide all personnel, equipment, instrumentation, and supplies necessary to perform all testing.

Written notification of planned testing shall be given to the Port a minimum of 14 days prior to the test, and in no case shall notice be given until after the Contractor has received written approval of the specific test procedures.

* + - * 1. Test Procedures and Reports: Test procedures shall explain, in detail, step-by-step actions and expected results demonstrating compliance with the requirements of this section.

Test reports shall be used to document results of the tests.

Reports shall be submitted to the Port for approval within 7 days after completion of each test.

* + - * 1. Contractor’s Field Testing: Calibrate and test all equipment, verify operation, place the integrated system in service, and test the integrated system.

Submit a report to the Port for approval describing results of functional tests, diagnostics, and calibrations including written certification that the installed complete system has been calibrated, tested, and is ready to begin operation.

END OF SECTION 281300