SECTION **28 13 00** – **ACCESS CONTROL AND ALARM MONITORING SYSTEM (ACAMS)**

PART 1 - GENERAL

1.01 SUMMARY

A. The access control and alarm monitoring system (ACAMS) specified in this section shall be an extension to the existing ACAMS currently deployed throughout the Los Angeles World Airport (LAWA).

B. Security Systems Contractor shall include in the Bid all labor, materials, tools, plant, transportation, storage costs, software/licenses, installation, programming, configuration, testing, commissioning, training, equipment, insurance, temporary protection, permits, inspections, taxes and all necessary and related items required to provide complete and operational equipment / systems shown and described in the Specifications.

C. The Security Systems Contractor is responsible for providing and coordinating final equipment arrangements, locations, phased activities and construction methods that minimize disruption to operations and provide complete and operational systems.

D. The Security Systems Contractor shall coordinate interfaces to existing systems that are being extended in the Project in order to minimize disruption to the existing systems operations. Any systems outages shall be approved in advance and scheduled with LAWA.

E. This section specifies the minimum requirements for access control, door alarms, intrusion detection, and monitoring and control provision.

F. The standard access control panel deployed throughout the LAWA Airports is the General Electric (GE, now a United Technologies Corporation) *Micro/5*. LAWA ACAMS system is GE Picture Perfect Version 4.5.1. This ACAMS has links with the Airport Police Computer Aided Dispatch (CAD) and LAWA Video system for doors considered as 107 doors. Security Systems Contractor is required to ensure all required ACAM 107 doors are set-up/interfaced and tested/commissioned with CAD and the Video System.

G. The Security Systems Contractor shall coordinate and cooperate with the CAD and Video System contractor (Section 28 23 00) to set up the linkage between the two systems.

H. Access control panels and electrified locking hardware power supplies shall be located in telecommunication rooms (TR) as indicated in the drawings.

I. The electronic access card format standard shall be the HID i-Class/PIV format. Access control card readers provided must be fully compatible with this format. Note that in addition to any cabling required to make these readers operational, two (2) spare Category 6A UTP cables from each security junction box (SJB) to the telecommunication rooms shall be provided. The Security Systems Contractor shall provide space for and install an RJ-45 terminal block in the SJB, and install and test the cables as specified in 27 05 00.

J. Related documents included in the specification requirements :

1. Division 1 – General Requirements, All Sections (including but not limited to)
   Section 01 11 00 – Summary of Work
   Section 01 25 00 – Substitution Procedure
   Section 01 31 00 – Administrative Requirements
   Section 01 33 00 – Submittal
   Section 01 40 00 – Quality Requirements
   Section 01 43 00 – Quality Assurance
   Section 01 64 00 – LAWA Furnished Products
   Section 01 77 13 – Preliminary Closeout Reviews
   Section 01 77 16 – Final Closeout Review
   Section 01 78 00 – Closeout Submittals
2. Division 08 Openings Sections:
   Section 08 11 13 – Hollow Metal Doors and Frames
   Section 08 11 19 – Stainless Steel Doors and Frames
   Section 08 31 13 – Access Doors and Frames
   Section 08 33 23 – Overhead Coiling Doors
   Section 08 71 00 – Door Hardware
   Section 08 71 13 – Automatic Door Operators
3. Division 14 Conveying Equipment Section:
   Section 14 21 00 – Heavy Duty Transit Type Machine Room-Less Elevators
4. Division 26 Electrical
5. Division 27 Communications (including but not limited to):
   Section 27 05 00 - Basic Telecommunications Requirements (request)
   Section 27 05 05 – Selective Demolition Telecommunication Systems (request)
6. Division 28 Electronic Safety and Security
   Section 28 23 00 – Video Surveillance System (VSS) (request)
   Section 28 31 00 – Fire Detection and Alarm

K. Products furnished (but not installed) under this section:

L. Products installed (but not furnished) under this section:

1.02 PRICE AND PAYMENT PROCEDURES

1.03 REFERENCES

A. Abbreviations and Acronyms
   1. ACAMS Access Control and Alarm Monitoring System
   2. AFF Above Finish Floor

3. ANSI American National Standard Institute
4. ASCII American Standard Code for Information Interchange
5. AOA Aircraft Operations Area
6. ATP Acceptance Test Plan
7. AWG American Wire Gauge
8. BMS Balanced Magnetic Switch
9. CBP U.S. Customs and Border Protection
10. CPU Central Processing Unit
11. CCTV Closed Circuit Television
12. EMI Electromagnetic Interference
13. FAA Federal Aviation Administration
14. FAR Federal Aviation Regulation
15. IATA International Air Transport Association
16. ICAO International Civil Aviation Organization
17. ICEA Insulated Cable Engineering Association
18. IDS Intrusion Detection System
19. ISA Instrument Society of America
20. LAX IATA Symbol for the Los Angeles International Airport
21. LCC Life Cycle Costs
22. LED Light Emitting Diode
23. MHz Megahertz
24. MRT Mean Restoral Time – The mean interval between failure and restoral to operational status; includes MTTR travel time and response time.
25. MTBF Mean Time Between Failures – The mean interval that is the sum of MTTF and MRT.
26. MTTF Mean Time To Failure – The mean interval between placing a specific piece of equipment or system in service and its operational failure.
27. MTTR Mean Time To Repair – The mean interval during which the repair process is successfully performed.
28. O&M Operation and Maintenance
29. PoE Power Over Ethernet
30. PTZ Pan, Tilt, Zoom
31. QC Quality Control
32. REX Request to Exit
33. RFI Radio Frequency Interference
34. SCC Security Control Center
35. SCP Security Control Panel
36. SJB Security Junction Box
37. TBIT Tom Bradley International Terminal
38. TSA Transportation Security Administration
39. UBC Uniform Building Code
40. UPS Uninterrupted Power Supply
41. VDT Video Display Terminal
42. VSS Video Surveillance System

B. References

1. Comply with all applicable codes standards, regulations, and the most current issue of the following publications, including all amendments thereto of the issue that is current on the date of contract award. Applicable requirements of the following publications shall apply to the work under this specification as if fully written herein. Where conflicts exist between the Technical Specification and the referenced publications, local codes shall govern.
   a. American Standards Association (ASA)
   b. Institute of Electrical and Electronic Engineers (IEEE)
   c. National Fire Protection Association (NFPA)
   d. National Electrical Manufacturers Association (NEMA)
   e. Underwriters Laboratories, Inc. (UL)
   f. Federal, State and Municipal Building Codes and all other Authorities having jurisdiction
   g. National Electrical Code (NEC)
   h. Insulated Power Cable Engineers Association Specification (IPCEA)
   i. American Society for Testing Materials Specification (ASTM)
   j. Occupational Safety and Health Administration (OSHA)
   k. National Electrical Safety Code (NESC)
2. Special attention shall be made to the following specific codes, standards, and publications where applicable:
   a. ANSI B20.1 Conveyor Safety
   b. ASTM F.1468-93 Standard Practice For Evaluation
   c. Customs and Border Protection Airport Technical Design Standards for Passenger Processing Facilities, August 2006
   d. EIA 232-D Interface between Data Terminal Equipment and Data Circuit-Termination Equipment Serial Binary Data
   e. EIA RS-310-C Racks, Panel, and Associated Equipment
   f. 49 CFR 1520 Protection of Sensitive Security Information
   g. 49 CFR 1540 Civil Aviation Security General Requirements
   h. 49 CFR 1542 Airport Security
   i. 49 CFR 1544 Aircraft Operator Security
   j. 49 CFR 1546 Foreign Air Carrier Security
   k. 49 CFR 1548 Indirect Air Carrier Security.
   l. NFPA 72-D - Installations, Maintenance and Use of Proprietary Protective Signaling Systems
   m. NFPA 75 Protection of Electronic Computer Data Processing Equipment
   n. NFPA 77 Static Electricity
   o. NFPA 78 Lightning Protection Code

p. Transportation Security Administration Recommended Security Guidelines for Airport Planning, Design and Construction, June 15, 2006
q. UL 294 Access Control System Units
r. UL 611 Central Station Burglar Alarm Units and Systems
s. UL 634 Intrusion Detection Units
t. UL 681 Installation and Classification of Mercantile and Bank Burglar Alarm Units
u. UL 796 Electrical Printed-Wiring Boards
v. UL 1076 Proprietary Burglar Alarm Units and Systems
w. UL 1950 Information Technology Equipment, including Electrical Business Equipment References to codes and standards called for in the Specifications refer to the latest edition, amendments, and revisions to the codes and standards in effect on the date of these Specifications.

3. In addition, the Security Systems Contractor shall comply with all applicable Security Directives as issued by the TSA.

1.04 ADMINISTRATIVE REQUIREMENTS

1.05 SUBMITTALS

A. Action Submittals

1. Comply with all LAWA submittal procedures given in other Sections. The following is in addition to or complementary to any requirements given elsewhere.
2. Submit a detailed bill-of-materials listing all manufacturers, part numbers, and quantities that the Bidder proposes to use in this project.
3. Submit Manufacturers' Data:
    a. Security Control Panels.
    b. Card Reader devices.
    c. REX devices and related interfaces.
    d. Door alarm contacts and related interfaces.
    e. Alarm horns and related interfaces.
    f. Power supplies.
    g. Any other equipment installed as part of the system.
4. Product submittals shall be provided and approved prior to the commencement of installation activities of the ACAMS.
5. Submit all proposed labeling materials and nomenclature for approval.
6. Shop Drawings:
    a. Provide shop drawings that are applicable and pertain to access control and alarm system provisions.
7. Installation drawings:

a. Floor Plans
b. Riser Diagrams
c. Block diagrams
d. Door Details
e. Point Schedules
f. Connection of all new access control and alarm equipment with new Security Control Panels (SCPs), including block diagrams and wiring diagrams
g. Connection of new SCPs with the existing access control CPU, including block diagrams and wiring diagrams
h. Details of connections to power sources, including primary and secondary power supplies, uninterrupted power supplies, and grounding
i. Details of surge protection device installation
j. Equipment mounting details
k. Details of interconnection to data transmission media and data communication network including all hardwire and fiber optic systems

8. Coordination Drawings:
   a. Indicate locations where space is limited for installation and access.
   b. Submit floor plans, elevations, and details indicating major equipment and end device locations. Indicate all floor, wall and ceiling penetrations.
   c. Telecommunication Rooms: At least 30 days before beginning installation in each room, the Security Systems Contractor shall furnish a telecommunications room drawing showing the initial layout design and plans for the proposed mounting locations of ACAMS equipment, cable routings, and termination locations for all cable and equipment.
9. Theory of Operations
   a. Description, analyses, and calculations used in sizing equipment. Describe and show how equipment will operate as a system.
10. Test and Acceptance Plans
    a. Submit the following for review and approval prior to the performance of any testing:
       1) Performance and Functionality Verification Test Plan (including interfaces)
       2) Commissioning Test Plan

B. Project Record and Closeout Submittals
   1. Project Record Documents required include:
      a. Marked-up copies of Contract Drawings
      b. Marked-up copies of Shop Drawings

c. Newly prepared Drawings

d. Marked-up copies of Specifications, Addenda and Change Orders

e. Marked-up Project Data submittals

f. Record Samples

g. Field records for variable and concealed conditions

h. Record information on Work that is recorded only schematically

i. As-built drawings

j. Record drawings

k. Electronic as-built and LAWA LUSAD requirements

2. As-built drawings:

   a. In addition to the Project Record Drawing requirements set forth in Division 01 – General Requirements, As-built drawings shall fully document and be fully developed and provided, and shall include, but not be limited to:

      1) Floor Plans.

      2) Riser Diagrams.

      3) Block diagrams.

      4) Point-to point wiring diagrams.

      5) Door Details.

      6) Point Schedules.

      7) Detail of connections to cameras, monitors, and workstations.

      8) Details of connections to power sources, including primary and secondary power supplies, uninterrupted power supplies, and grounding.

      9) Details of surge protection device installation.

      10) Equipment mounting details.

      11) Rack/Cabinet layout elevations and details, including heat and load calculations.

      12) Details of interconnection to data transmission media and data communication network including all hardwire and fiber optic systems.

   b. Post changes and modifications to the Documents as they occur. Drawings will be updated electronically and submitted to LAWA in accordance with the schedule provided for this by LAWA. Do not wait until the end of the Project. Design Engineer will periodically review Project Record Documents to assure compliance with this requirement.

3. Upon completion of the as built drawings, LAWA and the Design Engineer will review the as-built work with the Security Systems Contractor.

4. If the as built work is not complete, the Security Systems Contractor will be so advised and shall complete the work as required.

5. Project Record Drawings shall also be submitted in electronic format. Electronic drawing format shall be AutoCAD® Release 2008 or later. LAWA shall have the right and capability to manipulate all electronic file drawings and documentation.

C. Maintenance Material Submittals

1. Submit Operations and Maintenance Manuals.

1.06 QUALITY ASSURANCE

A. Contractor Certification: The Security Systems Contractor or approved subcontractor shall be a GE/UTC certified security systems installer for the specific type of ACAMS equipment being installed. The Security Systems Contractor shall offer proof of certification by submitting a copy of certification with the Bid.

B. The Security Systems Contractor's Quality Assurance Inspector shall conduct a visual inspection of all installations to verify that the installations are in accordance with LAWA's and manufacturer's specifications. Records of the inspections signed and dated by the Quality Assurance Inspector shall be provided to the Design Engineer.

C. LAWA and the Design Engineer shall be notified by the Security Systems Contractor of any inspection(s) and LAWA and the Design Engineer may elect to participate in any inspection(s). Relevant QC information shall be input into LAWA CMMS (refer to paragraph 3.08).

1.07 SUBSTITUTION OF EQUIPMENT

A. Approval of alternate or substitute equipment or material in no way voids specification requirements.

B. Under no circumstances shall LAWA be required to prove that an item proposed for substitution is not equal to the specified item. It shall be mandatory that the Security Systems Contractor submits to Engineer all evidence to support the contention that the item proposed for substitution is equal to the specified item. LAWA's decision as to the equality of substitution shall be final and without further recourse.

C. In the event that the Design Engineer is required to provide additional engineering services as a result of substitution of equivalent materials or equipment by the Security Systems Contractor, or changes by the Security Systems Contractor in dimension, weight, power requirements, etc., of the equipment and accessories furnished, or if the Design Engineer is required to examine and evaluate any changes proposed by the Security Systems Contractor for the convenience of the Security Systems Contractor, then the Design Engineer's expenses in connection with such additional services shall be paid by the Security Systems Contractor and may be deducted from any moneys owed to the Security Systems Contractor.

1.08 EQUIPMENT CERTIFICATION

A. Provide materials that meet the following minimum requirements:

1. Electrical equipment and systems shall meet UL Standards (or equivalent) and requirements of the NEC. This listing requirement applies to the entire assembly. Any modifications to equipment to suit the intent of the specifications shall be performed in accordance with these requirements.
2. Equipment shall meet all applicable FCC Regulations.
3. All materials, unless otherwise specified, shall be new and be the standard products of the manufacturer. Used equipment or damaged material is not acceptable and will be rejected.
4. The listing of a manufacturer as “acceptable” does not indicate acceptance of a standard or catalogued item of equipment. All equipment and systems must conform to the Specifications.
5. Where applicable, all materials and equipment shall bear the label and listing of Underwriters Laboratory or Factory Mutual. Application and installation of all equipment and materials shall be in accordance with such labeling and listing.

B. Manufacturers of equipment assemblies that include components made by others shall assume complete responsibility for the final assembled unit.

1. All components of an assembled unit need not be products of the same manufacturer.
2. Constituent parts, which are alike, shall be from a single manufacturer.
3. Components shall be compatible with each other and with the total assembly for intended service.

C. Components of equipment shall bear the manufacturer's name or trademark, model number and serial number on a nameplate securely affixed in a conspicuous place, or cast integral with, stamped or otherwise permanently marked upon the components of the equipment.

D. Major items of equipment that serve the same function must be the same make and model.

E. Equipment and materials installed shall be compatible in all respects with other items being furnished and with existing items so that a complete and fully operational system will result.

F. Maximum standardization of components shall be provided to reduce spare part requirements.

1.09 DELIVERY, STORAGE AND HANDLING

1.10 FIELD/SITE CONDITIONS

A. Inspections

1. The Security Systems Contractor shall perform a detailed inspection of the site prior to submitting any technical data for approval.
2. The Security Systems Contractor shall verify that the proposed equipment and methods of installation are compatible with the existing conditions and prepare a corresponding written report of their findings.
3. LAWA shall be notified in writing if modifications of the existing building are required in order to accommodate the new equipment. These modifications shall be made only upon receiving written approval from LAWA.

B. General

1. The Security Systems Contractor shall employ the LAWA designated maintenance contractor with whom LAWA has a maintenance contract to perform the disconnection, connection, re-connection or configuration of ACAMS or other existing systems that might be affected by this. Acceptance testing to commission the ACAMS devices into the Campus Production system shall be required to be performed.
2. Note that all programming and configuration of the Picture Perfect Software shall be done only by LAWA designated maintenance contractor, or by LAWA at its discretion. This scope of work shall include ACAMS programming and configuration required for the components and systems installed under this specification. The Security Systems Contractor shall secure the services of this specific LAWA designated maintenance contractor for this work at no cost to LAWA.
3. The Security Systems Contractor shall provide all new conduit, UTP cable, optical fiber cable, innerduct, racks, cabinets, patch panels, cover plates, outlet boxes, related hardware, distribution, termination equipment, and any other appurtenances and equipment associated specifically with ACAMS. Refer to Section 27 05 00 Basic Telecommunications.
4. The Security Systems Contractor shall obtain the approval of LAWA and the Design Engineer for the final layout of ACAMS equipment to be installed in telecommunications rooms prior to the installation of any materials or equipment. Shop drawings showing proposed room layouts shall be submitted for approval before beginning installation.
5. The Security Systems Contractor shall furnish an adequate supply of technicians and materials at all times, and shall perform the work in the most appropriate, expeditious, and economical manner consistent with the interests of LAWA.
6. The Security Systems Contractor shall be responsible to LAWA for the acts and omissions of its employees, subcontractors and their agents and employees, and other persons performing any of the work under a contract with the Security Systems Contractor.

7. The Security Systems Contractor shall not unreasonably encumber the site with any material or equipment. Operations shall be confined to areas permitted by law, permits, and contract documents.
8. The Security Systems Contractor shall have an experienced Project Manager on site at all times when work is in progress on any project. The individual who represents the Security Systems Contractor shall be the single point of contact between the Security Systems Contractor and LAWA, and shall be responsible for the entire project. This representative shall be able to communicate with LAWA or designated representative whenever requested throughout the life of the project.
9. While working in the facility, the Security Systems Contractor shall not block any entrances, egresses, or other passageways that are necessary for normal, safe operation. It should be noted that the Security Systems Contractor is responsible to provide any lifts, hand trucks, etc. that it will need to transport its materials and equipment to and throughout the site.
10. The Security Systems Contractor shall protect all buildings, walls, floors, and property from damage resulting from the installation. Any and all damage to property shall be repaired by the Security Systems Contractor at its expense. If the Security Systems Contractor enters an area that has damage (not caused by the Contractor), the Security Systems Contractor shall immediately bring this to the attention of the Engineer so the area can be appropriately noted.
11. Following each day's work, the Security Systems Contractor shall clean up the areas in which it has been working and dump all trash in the appropriate designated areas.
12. Deliver products to site under provisions of Division 01 - General Requirements.
13. Store and protect products under provisions of Division 01 - General Requirements.
14. Coordinate with LAWA, locations and requirements for equipment and product storage.

C. Site Conditions
   1. Environmental Requirements:
      a. Comply with all manufacturers' instructions and recommendations concerning environmental factors.
   2. Protection:
      a. Fragile Items:
         1) Handle any fragile items with care using protective coverings to avoid damage to sensitive instrument relays, and other devices, and to avoid contamination by dirt and debris.
      b. Weather and Construction Protection:
         1) During installation, provide adequate temporary dust and weather protection for all equipment. Reinstall covers each time any adjustments are made on the equipment.
   3. Existing Conditions:

a. Security Systems Contractor shall inspect the site and identify all existing security provisions and conditions. This includes identifying any communications and/or ancillary equipment currently existing and/or in use. It shall be the Security Systems Contractor's responsibility to identify all existing provisions to be terminated to new, existing, or relocated systems.

b. All provisions shall be identified by the Security Systems Contractor and documented in the quality control inventory. Individual provision data such as provision type make and model, and serial number shall be obtained by the Security Systems Contractor at the time of demolition and documented in the quality control inventory.

1.11 WARRANTY

A. Warranty and Maintenance Requirements shall be in accordance with the Division 01 - General Requirements.

1. Materials and workmanship shall meet or exceed industry standards and be fully guaranteed for a minimum of one (1) year from Final Acceptance.
   a. All labor must be thoroughly competent and skilled, and all work shall be executed in strict accordance with the best practice of the trades.
   b. The Security Systems Contractor shall be responsible for and make good, without expense to LAWA, any and all defects arising during this warranty period that are due to imperfect materials, appliances, improper installation or poor workmanship.
2. Submit a copy of all manufacturer warranty information.

PART 2 - PRODUCTS

2.01 GENERAL

A. Unless otherwise specified, products for the ACAMS shall be consistent with and compatible with the established standards for LAWA ACAMS.

B. Latest technology available: Products shall be provided as specified. In the event the manufacturer(s) of specified products and materials have upgraded or replaced the specified products and materials with newer or improved technologies at the time of purchase, the newer or improved products or materials shall be provided unless they are incompatible with the rest of the ACAMS systems or so directed by LAWA (submit Request For Information if in doubt). Latest technology products and materials shall be operationally and functionally equivalent or superior to the specified products and materials. Products and materials shall be purchased by the Security Systems Contractor in a timely manner to meet construction schedules, but shall not be purchased so far advanced of the date(s) of installation that they become technologically obsolete or replaced with newer technologies.

C. Provide and install required cabling, connectors, patch cords, resister packs, terminators, and all other miscellaneous items required for a fully functional System.

D. ACAMS commissioning shall be conducted in accordance with LAWA ACAMS Commissioning Flow Chart.

E. In addition to any acceptance testing requirements specified elsewhere, the ACAMS shall be fully tested and accepted, with test results recorded individual test reports for LAWA review and acceptance. All ACAMS devices and equipment shall be tested. Test and acceptance reports shall include but not limited to:

1. Card reader controlled doors, including but not limited to:
   a Valid card read.
   b Invalid card read.
   c Valid request-to-exit.
   d Door forced open.
   e Door held open.
   f Door shunt.
   g Local alarm.
2. Alarm and monitor points.
3. ACAMS input and output interfaces.
4. ACAMS integration with VSS and cameras.

2.02 SYSTEM DESCRIPTION

A. The security related provisions for new Security Doors include access control, intrusion detection and duress/assistance alarm equipment, video surveillance cameras and recording equipment, and security system monitoring and control. All security measures are to be applied to interior and/or exterior locations as shown on the drawings. Wherever possible, unless specified elsewhere in the Specifications or Drawings, materials, equipment and installation shall conform to existing LAWA Standards for ACAMS system.

B. The access control system for LAWA is a GE Picture Perfect system. Security Control Panels (SCPs) shall be located in identified communications and electrical rooms throughout the terminal as indicated in the drawings.

C. The SCPs shall communicate to the existing GE Picture Perfect CPU and software system for monitoring and control. Communications between the GE Picture Perfect CPU shall be via the LAX data network utilizing full duplex Ethernet TCP/IP protocol.

D. Security system electrified door hardware included under this contract as specified in Section 08 71 00, Door Hardware shall be provided and installed by the door hardware Contractor. The Security Systems Contractor shall coordinate with the door hardware Contractor. It shall be the responsibility of the Security Systems Contractor to complete the low voltage electrical connections of the electrified door hardware.

E. Power supplies for electrified emergency egress panic door hardware (EPH) shall be provided and installed by the door hardware contractor, and shall be installed as indicated in the Security Door Details. The Security Systems Contractor shall provide the electrical connections between the electrified emergency egress panic door hardware and the EPH power supplies. The Security Systems Contractor shall coordinate with the door hardware contractor.

F. Doors, door frames and openings included under this contract as specified in the Division 08 specification sections shall be provided and installed by the door and door frame Contractor(s). The Security Systems Contractor shall coordinate with the door and door frame Contractor(s) for preparation of doors and frames for door position sensors, for wiring and conduit to and within frames, and for interfaces with door controllers for automatic door operators and overhead coiling doors.

G. The ACAMS integration with the VSS shall include, but not be limited to: automated PTZ camera positioning upon ACAMS alarms and events, automated camera call-up and display to VSS monitors upon ACAMS alarms and events, automatically initiate and/or adjust digital recording upon ACAMS alarms and events.

H. Two (2) spare Category 6a cables, 23 AWG, shall be installed from each ACAMS SJB to telecommunications room as indicated in the Telecommunications drawings. These cables shall be provided and installed by the telecommunications Contractor. The Security Systems Contractor shall coordinate with the telecommunications Contractor, and shall provide space in the SJB for the telecommunication Contractor to install an RJ-45 terminal block for the purpose of terminating and testing the spare Category 6a cables within the SJB.

I. Programming and configuration of GE Picture Perfect software shall be by LAWA designated ACAMS maintenance Contractor. This scope of work shall include ACAMS programming and configuration. The installing Security Systems Contractor shall secure the services of LAWA designated ACAMS maintenance Contractor for ACAMS programming and configuration at no additional cost to LAWA.

J. Contact information for LAWA designated ACAMS maintenance contractor:

Unisys Corporation
Benjamin C. Locke, Senior Contracts Manager
benjamin.locke@unisys.com
(703) 439-5270

K. All ACAMS equipment requiring building power shall be connected to building UPS or Emergency power circuits, as indicated in the drawings. The security systems Contractor shall coordinate with the electrical Contractor.

L. All equipment shall be installed in accordance with this specification. Provide and install any and all equipment necessary to provide a complete and operating system, and meet the full intent of this design and other specifications within these construction documents. Any equipment such as consumables, terminators, or any other materials or equipment needed to install this system shall be considered ancillary and be provided as a part of this project.

Security Systems Contractor shall provide cable for all security systems and integration of sub-systems. Cable shall be provided in accordance with manufacturer specifications for the equipment it is terminating to.

2.03 ACAMS EQUIPMENT

A. Access Control Panel (and associated components as required):
   1. GE M3000, with internal 12 VDC, 6 amp power supply (no substitutions)
   2. Include GE PXN plus CPU board
   3. Must be fully compatible with LAWA Picture Perfect Server Software at time of installation
   4. Provide and install one (1) 12 Volt, 12 Amp Hour sealed gel type battery for each GE M3000

B. Card Reader Interface Module
   1. GE 8RP model 110100501 (no substitutions)

C. Output interface module
   1. Provide and install a minimum of one (1) per M3000, and as required to support outputs as indicated in the specifications and drawings
   2. GE DOR model 110078001 or 110071001, no substitutions

D. Input interface module
   1. Provide and install a minimum of one (1) per M3000, and as required to support inputs as indicated in the specifications and drawings
   2. GE DI model 110072003 (no substitutions)

E. Wiegand Interface Unit
   1. Provided and install as required to support card readers as indicated in the specifications and drawings
   2. Install in SJBs located above (or near as approved by LAWA) ACAMS doors
   3. GE model WIU-4 (no substitutions)

F. Power Supplies
   1. Wall Mount
      a) 24VDC Power
         1) A minimum of one (1) 24VDC, 10 Amp Power Supply shall be provided for each GE M3000 Access control Panel, with no more than eight (8) doors (including one (1) electric lock and one (1) alarm horn per door) powered from a single wall mount 24VDC Power Supply
         2) Each door shall be powered from a dedicated current protected output.

3) Provide and install two (2) 12 Volt, 12 Amp Hour sealed gel type batteries for each 24VDC Power Supply.
4) Altronix AL1024ULACM, or approved equal.

2. 12VDC Power
   a) Provide as required for 12 volt devices not powered by other sources
   b) Provide and install two (2) 12 Volt, 12 Amp Hour sealed gel type batteries for each 12VDC Device Power Supply
   c) Altronix, AL1012ULACM, or approved equal

G. Card Reader Compatibility
   1. Card Readers and Card Readers with Keypads shall be compatible with Federal Information Processing Standards Publication 201 (FIPS 201)
   2. Card Readers and Card Readers with Keypads shall be compatible with LAX HID issued identification and access control cards, and shall be compatible HID 13.56 MHz Contactless Smart Card technologies.

H. Card Reader
   1. HID model R40 (no substitutions)
   2. The firmware shall support both HID I class and PIV card formats

I. Card Reader with Keypad
   1. HID model RK40 (no substitutions)
   2. The firmware shall support both HID I class and PIV card formats

J. Door Position Switches (Alarm Contacts)
   1. Door Position Switches shall be compatible with the door style and door materials
   2. Door Position Switches shall be magnetic activated and shall be flush mounted wherever possible
   3. Flush Mount
      a) GE 1078/1076 Series, or approved equal
   4. Surface Mount
      a) Surface mounted Door Position Switches shall be high security triple-biased devices.
      b) GE 2700 Series, or approved equal

K. Alarm Horns
   1. Alarm Horns shall be installed as indicated in the drawings
   2. Alarm Horns shall be installed at a height and in a manner consistent with existing alarms horns installed in LAWA

a) Alarm Horns shall be connected to the output interface module provided in the door's associated GE M3000 access control panel

3. Interior Alarm Horns
   a) System Sensor MHW, or approved equal
4. Exterior Alarm Horns
   a) Cooper Notification model MID-DC, or approved equal

L. Audio/Visual Alarm Signals

1. Audio/Visual Alarm Signals shall be installed as indicated in the drawings. Audio/Visual Alarm Signals shall be installed at a height and in a manner consistent with existing alarms horns installed in LAWA.
2. Prior to the installation of the Audio/Visual Alarm Signals the Security Systems Contractor shall coordinate with LAWA and the CBP with respect to the selection of the color of the strobe lens and the tone and level of the audible alarm signal.
3. The Security Systems Contractor shall demonstrate to LAWA and the CBP a functional Audio/Visual Alarm Signal device, including all available colored strobe lens options.
   a) Safety Technology, Inc. (STI) model SA5000 with back-box kit SUB-SA504, or approved equal

M. Duress alarm buttons

1. Mushroom Style
   a) Mushroom Style Duress Alarm Buttons shall be installed as indicated in the drawings
   b) Unless indicated otherwise, Mushroom Style Duress Alarm Buttons shall be wall mounted 42" AFF
   c) Mushroom Style Duress Alarm Buttons shall be latching when activated and require key reset
   d) Mounting plate shall be stainless steel
      1) Alarm Controls model KR-1-1, or approved equal

N. SJB cabinet

1. Each secure door shall have at least one SJB located on the secure side above each door through which all wiring for that door shall be routed. It shall be used for the mounting of the WIUs and also the Category 6A UTP terminations, and any other equipment as appropriate. If the door is a double door or there are multiple doors in one location, this box may be shared. Any such sharing requires prior approval by the Engineer before installation. The boxes shall conform to:
   a) 16.00" x 16.00" x 6.62", NEMA Type 1, hinged door. Provide with back panel and keyed cylinder lock
   b) Hoffman A16N16ALP, or approved equal

O. Wire and Cable

1. Low voltage wire and cable shall be provided and installed as required
2. Wire and cable shall be selected, sized and used as appropriate for the device application in accordance with the device manufacturer's specifications, voltage and load, and distance of the wire/cable run
3. Wire and cable runs shall be "home run"
4. Mid run splices are not permitted
5. Wire and cable shall be Belden, West Penn, Contractors Wire and Cable, or approved equal

2.04 MATERIALS

A. Color and Finish Selection:

1. In all public areas and in all other areas visible from public areas or from the exterior of the building, colors and finishes shall match the custom color and finish samples on file with LAWA. In all other areas, applicable colors and finishes shall be selected by LAWA from the manufacturer's standard color and finish schedule. For such areas, submit manufacturer's standard color and finish schedule(s).

2.05 UPS

A. All equipment will be powered by a UPS with a capability to support operations for at least four hours after supply power loss. All power will be obtained from emergency power sources.

2.06 FIRESTOPPING MATERIALS

A. Fire stopping for openings through fire-rated and smoke-rated walls and floor assemblies shall be listed or classified by an approved independent testing laboratory for "Through-Penetration Fire Stop Systems." The system shall meet the requirements of "Fire Tests of Through-Penetration Fire Stops" designated ASTM E814.

B. Inside of all conduits, the fire stop system shall consist of dielectric, water resistant, non-hardening, permanently pliable/re-enterable putty along with the appropriate damming or backer materials (where required). The sealant must be capable of being removed and reinstalled and must adhere to all penetrants and common construction materials and shall be capable of allowing normal wire/cable movement without being displaced.

PART 3 - EXECUTION

3.01 GENERAL

A. Provide and install and make fully operational all components required for a fully functional system.

B. System installation and construction methods shall conform to LAWA requirements, requirements of the State of California and all applicable building codes.

C. Security Systems Contractor shall install equipment to meet Seismic Zone 4 requirements of the State of California and as stated herein. Where undefined by codes and standards, Security Systems Contractor shall apply a safety factor of at least 2 times the rated load to all fastenings and supports of system components.

D. All equipment locations shall be coordinated with other trades and existing conditions. Coordinate work with other trades and existing conditions to verify exact routing of all cable tray, conduit, etc. before installation. Coordinate with all the Telecommunications, Mechanical, Baggage Handling and Electrical Drawings. Verify with LAWA and the Design Engineer the exact location and mounting height of all equipment in finished areas.

E. The Security Systems Contractor shall use existing conduit and surface raceway where possible and practicable. All work shall be concealed above ceilings and in walls, below slabs, and elsewhere throughout building. If concealment is impossible or impractical, Engineer shall be notified before starting that part of the work. In areas with no ceilings, install only after LAWA and Design Engineer reviews and comments on arrangement and appearance.

F. Where required, the Security Systems Contractor shall be responsible for cutting, patching, coring and associated work for the system at no additional cost to LAWA. Cut and drill from both sides of walls to eliminate splaying. Patch adjacent existing work disturbed by installation of new work. Cut openings in prefabricated construction units in accordance with manufacturer's instructions.

G. All conduit and sleeve openings used by the Security Systems Contractor shall be waterproofed or fireproofed in compliance with State and Local Building and Fire Codes. Strict adherence to National, State, and Local Fire Codes, particularly fire stopping will be required.

H. The Security Systems Contractor shall patch all openings remaining around and inside all conduit, sleeves and cable penetrations devices to maintain the integrity of any fire rated wall, ceiling, floor, etc. The fire stop system shall consist of a dielectric, water resistant, non-hardening, permanently pliable/re-enterable putty along with the appropriate damming materials (where required). The sealant must be capable of being removed and reinstalled and must adhere to all penetrants and common construction materials and shall be capable of allowing normal wire/cable movement without being displaced.

I. All building conduits and sleeves installed and/or used under these Specifications shall be fire stopped, or re-fire stopped, upon cable placement through such passageways.

J. Fire stopping for Openings through Fire and Smoke Rated Wall and Floor Assemblies:

1. Provide materials and products listed. The system shall meet the requirements of "Fire Tests of Through-Penetration Fire Stops" designated ASTM E814. To be used inside all conduits and sleeves. Caulk on exterior of conduit penetration.
2. Provide fire stop system seals at all locations where conduit, fiber, cable trays, cables/wires, and similar utilities pass through or penetrate fire rated wall or floor assembly. Provide fire stop seal between sleeve and wall for drywall construction.
3. The minimum required fire resistance ratings of the wall or floor assembly shall be maintained by the fire stop system. The installation shall provide an air and watertight seal.
4. The methods used shall incorporate qualities that permit the easy removal or addition of conduits or cables without drilling or use of special tools. The product shall adhere to itself to allow repairs to be made with the same material and permit the vibration, expansion and/or contraction of any items passing through the penetration without cracking, crumbling and resulting reduction in fire rating. Typical rating:
    a. Floors – three (3) hours
    b. Corridor walls – two (2) hours
    c. Offices – three-quarters (0.75) hour
    d. Smoke partitions – three-quarters (0.75) – one (1) hour
5. Provide fire stop pillows for existing cable tray penetrations through firewalls.

K. Manufacturer's recommended installation standards must be closely followed (i.e. minimum depth of material, use of ceramic fiber and installation procedures).

3.02 EXAMINATION

A. Inspect the jobsite and survey the conditions to be encountered during performance of the work. This shall be accomplished prior to starting the work. Failure of Security Systems Contractor to become familiar with the site conditions shall not relieve Security Systems Contractor of responsibility for full completion of the work in accordance with the contract provisions.

B. Verify that all conduit, wires, cables, security equipment are installed and ready for connection and integration with the rest of the system.

C. Examine area to be protected and verify that environmental characteristics will not affect effective communication and interfacing. Report observed problems in writing.

D. Determine that power supplies, conduit, wires, cables, connections, and equipment are ready for installation and interfacing before attempting installation.

E. Check all power and communications cabling for continuity before making connections.

F. Visually inspect each piece of equipment, determine defects, and correct.

G. Make arrangements through LAWA and inspect locations where installation work will be performed. Verify that conditions found are in accordance with drawings and are acceptable for Security Systems Contractor's installation work. Report any discrepancies in writing to LAWA, stating suggested means of correction. As may be required, inspect existing inside and outside cable plant to determine system runs and interface conditions. Coordinate with LAWA to establish interfaces.

3.03 INSTALLATION

A. Compliance:

1. Install the equipment in accordance with the contract documents, all applicable codes and standards and the Manufacturer's written instructions. The installed system shall meet all applicable equipment and performance requirements.

B. Standardization:

1. Standardize the installation practices and material to provide uniform materials and procedures to the maximum extent possible.

C. Locations:

1. Locate pull boxes, wire-ways or other items requiring inspection, removal, or replacement conveniently and accessibly with reference to the finished facilities.

D. Electrical Service:

1. Installation of electrical service to equipment shall conform to specific UBC Codes and Standards, NFPA 70, and other applicable requirements.

E. Electrical Equipment Inspection:

1. Provide electrical equipment inspection in accordance with NEMA PB 2.1 Part VII.

F. Installation Requirements:

1. Install all system components, including furnished equipment, and appurtenances in accordance with the manufacturer's instructions, and as shown, and shall furnish all necessary interconnections, services, and adjustments required for a complete and operable system as specified and shown. 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. Install the security system equipment in accordance with the standards for safety, NFPA 70, UL 681, UL 1037 and UL 1076, and the appropriate installation manual for each equipment type.
3. All wiring, including low voltage wiring outside the control console, cabinets, boxes, and similar enclosures, shall be installed in rigid galvanized steel conduit conforming to UL 6 (when outdoors), or electric metallic tubing (EMT) when indoors. Minimum conduit size shall be 3/4-inch. All other electrical work shall be as specified with electrical specifications and drawings that are part of the contract document and as shown. Grounding shall be installed as necessary to preclude ground loops, noise, and surges from adversely affecting system operation.
4. Detailed shop drawings shall be provided as part of the submittal process. The shop drawings shall include, but not be limited to exposed conduit and devices, including hangars, brackets, back boxes and related equipment.
5. All equipment connected to alternating current circuits shall be protected from power line surges. Equipment protection shall meet the requirements of ANSI C62.41. Fuses shall not be used for surge protection.
6. All inputs shall be protected against surges induced on device wiring. Outputs shall be protected against surges induced on control and device wiring installed outdoors and as shown. All communications equipment shall be protected against surges induced on any communications circuit.
7. All cables and conductors, except fiber-optics, which serve as communications circuits from the existing access control CPU to field equipment, and between field equipment, shall have surge protection circuits installed at each end. Fuses shall not be used for surge protection. The inputs and outputs shall be tested in both normal mode and common mode using the following two wave-forms:
    a) A 10 microsecond rise time by 1000 microsecond pulse width wave-form with a peak voltage of 1500 volts and a peak current of 60 amperes.
    b) An 8 microsecond rise time by 20 microsecond pulse width wave-form with a peak voltage of 1000 volts and a peak current of 500 amperes.
8. Calibrate all equipment.
9. Inspect each component, determine obvious defects, and correct.
10. All electrical work shall be in accordance Division 26.
11. All wiring and terminations shall be performed in accordance with Division 27, Section 27 05 00 Basic Telecommunications.
12. Perform tests as recommended by manufacturer or as required to ensure the ACAMS equipment is operating properly and meets specified requirements.
13. Correct all deficiencies detected and retest affected components.
14. Record test data, tabulate, and write narrative describing tests, results, deficiencies found, corrective measures, and results of retesting. Certify that the security equipment has been tested and is ready for performance verification testing.

15. Service Loops

    a) Service loops shall be provided for all ACAMS cabling within the Telecommunication Rooms. Service loops shall be of sufficient length to facilitate relocating wall mounted ACAMS control panels and power supplies to the Security racks without splices. Service loops shall be coiled and contained in appropriately sized pull boxes.

3.04 IDENTIFICATION AND LABELING

A. All cables and patch cables shall have a permanent label attached at both ends.

B. The Security Systems Contractor shall confirm specific labeling requirements with LAWA and the Design Engineer prior to cable installation or termination.

C. All indoor cable and patch cable labels shall be pre-printed using BRADY TLS 2200 printer or equivalent and shall be placed loose on the patch cable near the connector end without heat shrinking labels. Labels shall use a three line format with the origination patch panel and port on the first line, the destination patch panel and port on the second line and the system or other descriptive information on the third line.

D. Marking:

1. Equipment Name Plates: The following requirements shall apply:

    a) General: Attach a permanent, corrosion-resistant name plate to each equipment component showing the manufacturer's name, address, serial number and equipment rating. Each name plate shall be clearly visible on the exterior of equipment. Components located within equipment enclosures shall also be provided with name plates.

    b) Location and Fastening: Provide nameplates to identify all equipment components. Provide each panel assembly with a name plate on the interior of equipment enclosures, indicating number of equipment and unit of assembly. Fasten name plates securely with slotted stainless steel screws. The use of adhesive for fastening name plates will not be permitted.

2. Control and Display Labels:

    a) Use: Each control, display and any other item of equipment that must be located, identified, read or manipulated shall be appropriately and clearly labeled to permit rapid and accurate identification of its operating state of position.

    b) Orientation: Orient labels and information thereon horizontally so that they may be read quickly and easily. Vertical orientation shall be used only where space is limited.

3. Locations: Locate labels so that there is no confusion as to which item they identify. Labels shall not obscure any other information required by the operator. Controls shall not obscure labels. The location of labels shall be consistent.

E. Use Permanent Room Numbers as indicated on the Room Finish Schedules for construction period identification of rooms and building spaces. All required shop drawings and submittals, including manuals and Project Record Drawings shall identify rooms and spaces using the Permanent Room Numbers. Permanent identification devices including signage, equipment nameplates, and panels shall use the Permanent Room Numbers.

3.05 STARTUP

A. The Security Systems Contractor shall not apply power to the system until after:

1. System and components have been installed and inspected in accordance with the manufacturer's installation instructions.
2. A visual inspection of the system components has been conducted to ensure that defective equipment items have not been installed and that there are no loose connections.
3. System wiring has been tested and verified as correctly connected as indicated.
4. All system grounding and transient protection systems have been verified as properly installed and connected, as indicated.
5. Power supplies to be connected to the system and equipment have been verified as the correct voltage, phasing, and frequency as indicated.
6. Satisfaction of the above requirements shall not relieve the Security Systems Contractor of responsibility for incorrect installations, defective equipment items, or collateral damage as a result of Contractor work/equipment.

3.06 QUALITY CONTROL, TESTING AND ACCEPTANCE

A. Test, Commission and Acceptance

1. Conduct an Installation Test and total Acceptance Test upon completion of equipment installation. Testing shall be coordinated as necessary, to demonstrate that all interfaces have been successfully implemented.

2. Installation and Acceptance Test Procedures and Reports:

a General: Installation and acceptance tests shall be conducted in the normal operational environment to the maximum extent possible. The tests shall represent operation in the normal mode in which each system will operate. If interfaces are incomplete, provide simulation of those interfaces so that the system may be tested as a complete and stand-alone entity. Perform all equipment repair and/or adjustment that may be required during acceptance testing.

b. All ACAMS devices and equipment / systems shall be tested. Test and acceptance reports shall include, but not be limited to:
   1) Card reader controlled doors, including but not limited to:
      a) Valid card read
      b) Invalid card read
      c) Valid request-to-exit
      d) Door forced open
      e) Door held open
      f) Door shunt
      g) Local alarm
   2) Alarm and monitor points
   3) ACAMS input and output interfaces
   4) ACAMS integration with VSS and cameras

c. Availability Tests: Installation and acceptance testing shall include conducting individual availability tests for each equipment item. Requirements for availability tests are as follows:
   1) Availability shall be determined in accordance with Quality Control procedures, except for the test duration as specified herein.
   2) The availability tests shall consist of the equipment being operated as a complete stand-alone entity with the exception that incomplete interfaces may be simulated. In all other respects, the equipment shall be operated in the mode that would normally prevail.
   3) The duration of each availability test, as a minimum, shall consist of a 5 day period with the availability ratios of 100% being met or exceeded over the total period.

d. System Commissioning:
   1) General: Security Systems Contractor shall be responsible for ensuring that the installation and related interfaces is completed and operational at least thirty (30) days prior to scheduled beneficial occupancy. In the event the installation and related interfaces is not completed and operational by the scheduled beneficial occupancy date, Security Systems Contractor shall establish and submit a security plan to LAWA that complies with FAR Part 107.14 and related LAWA security requirements. The security plan shall be submitted to LAWA and FAA for approval. The security plan, revisions, and security measures to be deployed until such time the new security equipment is completed and operational shall be at Security Systems Contractor's expense.
   2) After all installation and acceptance test requirements specified have been complied with, the equipment shall be commissioned. After commissioning has

been completed, LAWA will take possession of the equipment and utilize it in accordance with the conditions described in the contract documents.

3) Prerequisites To System Commissioning:

   a) Outstanding work items that may exist, such as facility interfaces, project record drawings, and/or in-process change orders, shall be documented and submitted to LAWA for review prior to start of equipment commissioning. Documentation of outstanding work items shall take the form of punch lists of critical action items lists that describe the work, the expected completion schedule, and the impact upon operation. Depending upon the nature of the outstanding work item, LAWA may grant a waiver to accomplish partial commissioning of any of the equipment. Completion of waived outstanding work items shall then be assigned to the post-commissioning operations and maintenance.

   b) Preliminary testing of ACAMS devices, including but not limited to access controlled door devices, control panels and alarm monitor devices, shall be conducted and witnessed by LAWA on a separate Picture Perfect server/workstation platform prior to activation and commissioning of the ACAMS devices on the existing LAWA production Picture Perfect server. The test Picture Perfect platform shall be provided by the Security Systems Contractor.

4) Commissioning Procedure

   a) The commissioning procedure shall be witnessed by LAWA. The commissioning procedure shall be conducted by Security Systems Contractor and shall consist of a detailed inspection, and physical accounting of each equipment item. An operational demonstration shall then be conducted in which the equipment shall function in the normal operational mode, and shall operate completely error-free in terms of hardware and software performance. Occurrence of any equipment failure shall terminate the demonstration. The demonstration shall restart and run for a period of time designated by LAWA after the failure has been corrected. Except for any outstanding work items as previously described, this shall complete the commissioning procedure.

3.07 CLEANING

3.08 COMPUTERIZED MAINTENANCE

A. Information regarding all equipment including model, nomenclature, serial number, function, location, recommended preventative maintenance schedule and other pertinent data will be stored in the CMMS database. Security Systems Contractor shall include in their Bid the cost for collecting and inputting this data for all systems and equipment provided by this Contract into this database.

3.09 CLOSEOUT ACTIVITIES – FINAL INSPECTION AND ACCEPTANCE

A. Completion of successful installation, final tests and commissioning, receipt of the test reports and as-built documentation including data input into the CMMS and successful performance of the installed equipment / system for a thirty (30) day period will constitute Final Acceptance.

3.10 MAINTENANCE

END OF SECTION 28 13 00