SECTION 28 13 13 – ACCESS CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. Provide all labor, materials, and equipment for the complete installation of Work called for in the Contract Documents.

B. This Section includes the minimum requirements for American Airlines' Access Control System integration.

C. The American Airlines existing Access Control System (ACS) is a Honeywell ProWatch 4.3 based system that serves multiple facilities. It is the intent that the existing system will be extended to the new facility outlined in this package and the new doors in that facility will be added to the existing system.

D. The security integrator shall meet Honeywell's GOLD status.

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E. Included in this section are the minimum composition requirements and installation methods for the following:

1. Access Control Door Controller
2. Card Readers
3. Door Position Switches
4. Power Transfer Devices
5. Electrified Locksets and Exit Devices
6. Power Supply

F. The intent is for the scope of work to be divided up as follows:

1. Door contractor:
    a. Provide and assemble a prepped door and frame, power transfer devices, locking hardware, door position switches and wiring harnesses.
    b. Ensure the door is properly hung and the mechanical functions operate, as intended.
2. Electrical contractor:
    a. Extend conduit from each backbox on the door frame to the agreed-upon location of the door controller, as coordinated with the security contractor.
3. Security contractor:
    a. Install the door controller and connect the door wiring to the controller
    b. Program the system according to the functional requirements outlined for the door, as described in the drawing set.
    c. Ensure the electrical and electronic features of the door function as intended.

1.2 DEFINITIONS AND TERMS

A. Trade association names and communications terminology are frequently abbreviated. The following acronyms or abbreviations may be referenced within this Section:

1. AA American Airlines
2. ACS Access Control System
3. AHJ Authority Having Jurisdiction
4. ANSI American National Standards Institute
5. AWG American Wire Gauge
6. BICSI Building Industry Consulting Service International
7. CMR Communications Riser Cable
8. CMP Communications Plenum Cable
9. DFW Dallas/Fort Worth International Airport
10. EMI Electromagnetic Interference
11. EPT Electrical Power Transfer
12. FCC Federal Communications Commission
13. IEEE Institute of Electrical and Electronics Engineers
14. ISO International Standards Organization
15. LAN Local Area Network
16. NEC National Electric Code
17. NEMA National Electric Manufacturers Association
18. NECA National Electrical Contractors Association
19. NFPA National Fire Protection Association
20. STD Standard
21. TIA Telecommunications Industry Association
22. UL Underwriters Laboratories
23. UTP Unshielded Twisted Pair

B. Architecture

1. The names assigned to the equipment in this Section and the methods of interconnecting them are intended to describe equipment consistent with the new system. These descriptions are not intended to prevent the implementation of any new equipment or devices on the part of Contractor.

C. SSP IP Series Controller

1. A distributed intelligence processor that is capable of supporting multiple portals with up to thirty-two (32) NSC-100s supporting up to two (2) readers per portal.

D. IP Based Door Module

1. A distributed intelligence processor that is capable of supporting a single portal, with up to two (2) readers for that portal, providing the electrical interface for the card reader, door monitor points, door devices and door control components.

E. Credential Reader

1. A portal device to read encoded portable credentials for the purpose of determining access rights.

F. Electromagnetic Lock, Electric Lockset, Electric Strike

1. A device to secure the portal and allow passage through the portal by means of remote control.

G. Emergency Egress Magnetic Lock, Delayed Egress Exit Device

1. A device that will allow a delayed egress function while still maintaining security and allowing passage through the portal by means of remote control.

H. Door Position Switch (DPS)

1. A device used to monitor the open/closed status of the portal.

I. Request to Exit Device

1. A device used to allow egress through a secured portal without creating an alarm condition.

J. Latch / Bolt Monitor

1. A switch installed in a door jamb to mechanically verify the door's latch and bolt positions when the door is in the closed.

K. Duress Button

1. A silent device used to generate an immediate alarm condition at an alarm monitoring workstation.

L. Portal

1. Door monitored and/or controlled by the Access Control System.

1.3 QUALITY ASSURANCE

A. The Texas Department of Public Safety requires that portions of this work defined as regulated under the provisions of SB 1252, 78th Legislative Session of the State of Texas be performed by a contractor holding a valid and current Class B Security Contractor Company License.

B. Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where "approved equal" is stated, or a substitution is requested, equipment shall be equivalent in every way to that of the equipment specified. All substitutions are subject to the control and approval of the Owner.

C. Comply with NEC as applicable to construction and installation of security system components and accessories.

D. Provide system components, which are UL -listed and labeled.

E. All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Owner.

F. Contractor's Qualifications:

1. Firms regularly engaged in the installation of Electronic Access Control systems and that have three (3) years of installation experience with systems similar to that required for this project. The Contractor shall have been actively engaged in installing, maintaining and operating similar systems and services as outlined in this document.
2. The Contractor shall have a minimum of three (3) sites that are actively similar systems, and at least one of those sites must be utilizing a system similar to that in use by the Owner. The similar system must be currently in operation, and have been in operation for at least the proceeding twelve (12) months.

3. Provide references to include client names, phone numbers and a summary of project details. These references will be checked and the clients will be asked questions relative to the performance of your company.
4. Provide verification that installation personnel responsible have been factory trained to install the products described in this Section.
5. Provide full time project manager with a minimum of ten (10) years field experience in installation of communications systems and infrastructures. Project manager shall be assigned for the duration of the project and shall not be replaced without written consent from the Owner.

G. Manufacturer's Qualifications:

1. Firms regularly engaged in manufacture of products of the types, ratings and capacities required for this project; whose products have been in satisfactory use in similar service for not less than five (5) years, with production capabilities per applicable NEMA standards.

H. Material and Work specified herein shall comply with the applicable requirements of:

1. NECA 1 – Standard Practice of Good Workmanship in Electrical Construction, 2010
2. ANSI/NECA/BICSI-568 – Standard for Installing Commercial Building Telecommunications Cabling, 2006
3. ANSI/TIA-606-A – Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
4. ANSI/TIA-607-D – Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications, 2019
5. NFPA 70 – National Electric Code, 2014
6. International Building Code (IBC), 2015
7. UL 13 – Standard for Safety for Power-Limited Circuit Cables
8. UL 294 – Standard for Access Control System Units, 2009
9. UL 444 – Standard for Safety for Communications Cables
10. UL 497B – Standard for Protectors for Data Communications and Fire-Alarm Circuits
11. UL 681 – Standard for Safety Installation and Classification of Mercantile and Bank Burglar Alarm Systems
12. UL 969 – Standard for Marking and Labeling Systems
13. UL 1037 – Standard for Safety Antitheft Alarms and Devices, Third Ed.
14. UL 1076 – Standard for Proprietary Burglar Alarm Units and Systems, Fourth Ed.
15. IEEE 802 – Local Area Network Standard
16. Title 47 CFR Part 15 – Radio Frequency Devices
17. BICSI – Telecommunications Distribution Methods Manual, 14th Edition
18. Applicable codes and directives of authorities having jurisdiction

I. Work:

1. The Work shall be performed in compliance with the applicable manufacturer's installation instructions, Standards, and certifications listed herein, the Contract Documents, and governing codes and regulations of the authorities having jurisdiction.
2. The drawing and specification requirements govern where they exceed Code and Regulation requirements.
3. Where requirements between governing Codes and Regulations vary, the more restrictive provision applies.
4. Nothing in the Contract Documents grants authority or permission to disregard or violate any legal requirements.

1.4 CONFLICTS

A. This installation shall be made in strict accordance with the Specifications, Drawings, any applicable codes, referenced publications and standards. In case of conflicts between the aforementioned, notify the Owner in writing prior to commencement of affected work.

1.5 SCHEDULING

A. The Contractor shall comply with all scheduling requests established by Owner, both prior to commencing Work, and during construction. The Contractor shall provide a detailed schedule of work to be performed.

1.6 REQUIREMENTS

A. All references to manufacturers, model numbers and other pertinent information herein are intended to establish standards of performance and quality of construction. The Owner must approve material submittal and substitutions in writing.

B. Verification that all the components specified and installed meet the criteria specified by the respective component manufacturer, supplier and designer is the responsibility of the Contractor.

C. All installation tools, special equipment and testing apparatus required to accomplish field connections and related work as described herein shall be furnished by the Contractor at no additional cost.

D. The requirements as given in this document are to be adhered to unless revised by the Owner in writing.

E. The Owner reserves the right to waive these requirements at any time.

1.7 SUBMITTALS

A. Comply with provisions of Division 01.

B. Comply with provisions of Section 28 05 00.

C. Provide all submittal requirements under this section as a single package.

D. Contractor shall not utilize the Consultants' original design drawings in the submittal or shop drawing process. Contractor shall develop their own original shop drawings.

E. Provide pricing for a System Maintenance Agreement as further defined in the Warranty section of these specifications.

F. Submit manufacturer's data on Access Control System components including, but not limited to, electrical specifications, mechanical specifications, rough-in diagrams, and instructions for installation, operation and maintenance, suitable for inclusion in maintenance manuals.

G. Provide Shop Drawings showing equipment/locations and arrangements. Provide an assembly drawing of every equipment rack and card cage enclosure with location and dimensions shown. Provide wiring diagrams showing all field connected wiring.

H. Prepare and submit Phased System Testing documents and plans, Final Testing and Acceptance Plans, Test Procedures, Test Reports, and System Availability Test documents as described in this specification section. The contractor shall submit the standard forms used for these tasks for Owner approval.

1.8 MOCK-UP

A. Build mockup to demonstrate quality standards and functions for fabrication and installation of each Type security door controls and hardware.

1. Mockup shall consist of a single security door and frame with all door hardware as specified in 08 71 00 Door Hardware, security devices including conduits for security device(s) wiring specified in Division 28, and door and door frame as specified in Sections 08 11 13 Hollow Metal Doors and Frames and 08 12 16 Aluminum Frames.
2. Door shall be fully operational for testing of security systems.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Owner specifically approves such deviations by Change Order.
4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 CONTRACTOR CLOSE OUT SUBMITTALS

A. The intent of this Section is to provide supplemental information to include with the complete documentation of the existing system, for the purpose of system operation and maintenance during and after the Warranty period. It is intended that the operation and maintenance manuals be exhaustive in the coverage of the system to the extent that they may be used as the sole guide to the troubleshooting, identification, and repair of defective parts.

B. The supplemental information requirement of this Section is in addition to Shop Drawing requirements. Information documentation and Drawing sets shall be compiled after system fabrication and testing, and shall incorporate any changes made after Shop Drawing submittal.

C. The Contractor shall provide the Owner with three (3) complete hard copies of the supplemental information. The contractor shall also provide three (3) complete soft copies of the above information in PDF format on CD or flash drive.

1. This information shall include wiring diagrams, schematics, and functional details such that any component, wire, or piece of equipment added to the system may be easily identified by going to the actual equipment and making reference to this information.
2. It is required that all supplemental products be neatly labeled and easily identifiable.
3. Every terminal, wire, component, or piece of equipment, relay, and other such items shall have a number or letter designation.
4. All of these identification characteristics shall be included in the supplemental information documents.
5. Contractor shall not utilize the Consultants' original design drawings in the as-built drawing process. Contractor shall develop their own original as-built drawings.

D. Provide manufacturer's standard literature, covering all equipment included in the system installation. The supplemental information shall contain specifications, adjustment procedures, circuit schematics, component location diagrams, and replacement parts identification. All references to equipment not supplied on this Project shall be crossed out.

E. Submit Closeout documentation in accordance with Division 01 of the Project Manual and any applicable supplements.

F. Drawing Books: All Drawings developed specifically for this Project shall be reduced to 11" X 17", folded and bound with hard plastic covers. The 11" X 17" Drawings provided shall be easily readable after printing, even if this requires breaking large Drawings into several parts. Text shall be no smaller than 1/16-inch.

1. The drawing book documents shall be produced with AutoCAD and saved in AutoCAD 2013, or earlier format. The electronic files shall be provided to the Owner at the completion of the Project on CD-ROM or flash drive.
2. Provide component identification and cross reference on the Drawings to allow the maintenance department to understand the function of each item (the block diagram), find the room where the device is mounted (Contract Document plans), find its location in a rack (Arrangement Drawings), find how it is wired (wiring diagrams), and its detailed Specifications (vendor data sheets), and how to repair it (spare part lists). Include the following drawings as a minimum:
3. Functional Block Diagram
    a. Provide an overall block diagrams showing the major interconnections between components and subsystems.
4. Arrangement Drawings
    a. Provide Drawings showing the physical arrangement of all major system components.
5. Floor Plans
    a. Provide floor plans showing the location of all components in the system and at each door.
    b. Provide floor plan of the communications rooms showing the location of each piece of related equipment in the room.
6. Elevation Drawings
    a. Provide elevation drawings of all wall mounted equipment showing the location of each component on the wall. Components on the walls shall be identified as in the functional block diagrams.
7. Wiring Diagrams
    a. Provide wire-by-wire diagrams showing all field installed interconnections. The wire color and identification on the diagrams shall agree with the wire and wire markers installed on the equipment.

1.10 INTELLECTUAL PROPERTY

A. Should patented articles, methods, materials apparatus, etc., be used in this Work, the Contractor shall acquire the right to use same. The Contractor shall hold the Owner and their agents harmless for any delay, action, suit, or cost growing out of the patent rights for any device on this Project.

B. Should copyrighted software be used in this Work, the Contractor shall acquire the right to use same. The Contractor shall hold the Owner and their agents harmless for any delay, action, suit, or cost growing out of the copyrights for any software on this Project.

C. All software required for the complete operation of the system as specified herein shall be delivered with either full Ownership transferred to the Owner, or a non-time limited license to use on each machine it is installed on, including the right to make backup copies.

1.11 DELIVERY, STORAGE AND HANDLING

A. Deliver materials factory-packaged in containers or reels and handle in accordance with manufacturer's recommendations. Store in a clean, dry space and protect products from damaging fumes and traffic. Handle materials carefully to avoid damage.

B. Storage space on project site may be limited. Contractor shall coordinate delivery and arrange storage of materials and equipment with the Owner.

C. Components sensitive to damage in a harsh environment shall be stored off-site and delivered as needed.

D. Provide protective covering during construction to prevent damage or entrance of foreign matter.

E. Contractor is responsible for on-site security of tools, test equipment and materials.

F. Replace at no expense to Owner, product damaged during storage, handling or the course of construction.

1.12 PROJECT CONDITIONS

A. Verify conditions on the job site are applicable to this Work. Notify the Designer in writing of discrepancies, conflicts, or omissions promptly upon discovery.

B. The drawings diagrammatically show cabling and arrangements of equipment fitting the space available without interference. If conditions exist which make it impossible to install Work as shown, recommend solutions and/or submit drawings to the Designer for approval, showing how the Work may be installed.

1.13 WARRANTY

A. Warrant labor and product to be free of defects and deficiencies, and to conform to the drawings and specifications as to kind, quality, function, and characteristics, following Contractor Warranty requirements defined in Division 01. Should a failure occur within the Contractor's warranty period, the Contractor shall provide all labor and materials necessary to restore the system to the condition required for the Final Test and Acceptance for this Contract, at no cost to the Owner.

B. During the Warranty period, additional card readers and components may be connected and their use entered in database. New devices will be connected in the same manner as shown on the Drawings for this Contract and the existence of the new connections shall not void this guarantee.

C. At completion of this project, Contractor shall provide to Owner a written quote for a System Maintenance Agreement to cover components installed or removed by this project. Quote shall itemize added and removed components, and pricing shall be provided as a monthly rate.

D. All surplus parts and pieces to the installation shall be maintained as a spare parts inventory at the building site. Parts replaced during the warranty period shall have a warranty matching that of the original part from date of replacement.

PART 2 - PRODUCTS

2.1 GENERAL

A. The products specified in this document do not necessarily constitute the exhaustive list of products required to complete the statement of work. Except where described in the SUMMARY subpart of this document, the contractor is responsible for providing any other parts and materials needed to deliver a complete and working system.

2.2 ACCEPTABLE VENDORS

A. The vendors listed are provided to establish a basis-of-design. Alternative vendors may be proposed, for review by the Owner.

2.3 SYSTEM DESCRIPTION

A. Modify the existing distributed access control system as required and provide a complete operating system as described herein and shown on the Drawings. The Security Contractor is responsible for all necessary relays, interfaces, and power supplies to interface security access controls and locks with automatic door openers or door locking devices provided by the door hardware vendor.

B. The access control system is to consist of a series of door controllers that provide the interface between the field devices and the ACS host computer. Door controllers shall be capable of providing autonomous control and monitoring of field equipment if communications between the field panel and host computer are interrupted.

C. Each door controller is to be housed in an enclosure, suited specifically to the physical environment in which it is to be installed in. Each enclosure shall be equipped with a cabinet tamper switch, and be secured with a lock, or tamper resistant screws.

D. The door controller shall provide local control and monitoring of ACS devices and related ACS equipment. System interfaces shall include, but not be limited to:

1. Card readers
2. Keypads
3. Combination card reader with keypad
4. Biometric readers
5. Electric door locks and lock controllers
6. Electric lock bond sensors or position switches
7. Balanced magnetic switches
8. Fire alarm system
9. Intercom system field stations or intercom exchange
10. Coiling rollup doors, grilles, and motor controllers
11. Vehicle detection loops
12. Gate operators and traffic arms

13. Other equipment, devices, and appurtenances as required for a fully functional access control system

E. Any special power treatment required, such as filtering or spike elimination that may be required for proper operation and protection of the ACS, shall be provided by the Contractor.

F. Provide surge protection for all wiring to exterior devices or panels. Fuses are not acceptable and group protection is not acceptable. Individual circuits are to be protected by SAD, or MOV protection schemes. The proposed scheme shall be submitted to the Owner for approval prior to installation.

2.4 ACCEPTABLE DISTRIBUTORS

A. Subject to compliance with requirements set forth in in this Specification, the Contractor shall procure all components through manufacturer authorized product distributors.

2.5 ACCESS CONTROL FIELD PROCESSING HARDWARE

A. Intelligent Controller

1. Provide an access control field processor for controlling doors.
2. Controller shall provide decision making, event reporting, and database storage for hardware platform.
3. The controller shall communicate with the host via on-board 10BaseTX Ethernet port. Use of a separate terminal server, connected to a serial port on the board is not acceptable.
4. Controller shall support the following credential types:
    a. Digital Proximity.
    b. Magnetic Stripe.
    c. Smart Card.
    d. Keypad.
    e. Biometrics.
5. The card reader functions shall include, but not be limited to the following:
    a. Multiple card format support by reader.
    b. Paired reader support.
    c. Alternate reader support.
    d. Elevator support.
    e. Turnstile support.
    f. Biometric device support.
    g. Anti-passback support.
    h. Area-based, reader-based, or time based.
    i. Supports host-based approval rules.
    j. Keypad support.
6. Supported database functions shall include:
    a. Configurable card database.
    b. Supports PIN codes up to eight (8) digits.
    c. Programmable card activation and deactivation times and dates.
7. Supported intrusion alarm functions shall include:
    a. Entry delays and exit delays.

b. Area monitoring.
c. Standard alarm masking.
d. Control and alarm processing from the keypad.

8. Approved products:

a. Honeywell PW7K1IC PW-7000 Modular Intelligent Controller System
b. Owner approved equivalent

B. Reader Module

1. Provide reader modules, as required to accommodate the doors being served by the controller.
2. Module shall Supports a wide range of reader technologies including Wiegand, magnetic stripe, proximity, and keypad.
3. Reader module shall include the following I/O capabilities:

a. Two (2) readers.
b. Eight (8) supervised, general purpose alarm inputs, with programmable circuit type.
c. Two (2) dedicated alarm inputs for tamper detection and power loss.
d. Six (6) general purpose output relay, form-C.
e. RS-485 communications port.

4. Include supervision resistors, as required. When used, these resistors shall be installed as close to the point being supervised, as possible.
5. Approved products:

a. Honeywell PW7K1R2 Dual Reader Module
b. Owner approved equivalent

C. I/O Modules.

1. Provide digital input and relay output modules, as required.
2. Digital inputs shall monitor four states of each circuit:

a. Normal state
b. Active state
c. Shorted out
d. Open circuit

3. Outputs to be equipped with Form "C" relays, providing normally open and normally closed contacts.
4. Include supervision resistors, as required. When used, these resistors shall be installed as close to the point being supervised, as possible.
5. Module to include separate inputs for tampering and fault monitoring.
6. Approved products:

a. Honeywell PW7K1IN Sixteen Input Module
b. Honeywell PW7K1OUT Sixteen Output Module
c. Owner approved equivalent

2.6 POWER SUPPLIES and Enclosures

A. Access Control Enclosure

1. Provide new access control enclosures with integrated dual-voltage power supplies.
2. The access control enclosure shall be all-steel and equipped with a key lock.
3. The cover shall be removable and have a tamper-proof switch.
4. The enclosure shall comply with FCC Class A, CE, UL 294 and UL 1076 listings.

5. The enclosure shall be capable of accepting an intelligent controller board and up to nine (9) I/O boards.
6. The enclosure shall be equipped with the following options:
    a. Custom backing plate designed for mounting Honeywell Integrated Security boards
    b. 12VDC, 20A access control power supply
    c. 24VDC, 10A door power supply
    d. Sixteen (16) Class 2 power limited auxiliary power distribution outputs
    e. Sixteen (16) Class 2 power limited managed lock power distribution outputs
    f. Battery charger
    g. Space for (4) batteries
    h. Tamper switch
    i. Inside and outside temperature sensor
    j. Network management of the power supplies, lock outputs and batteries
    k. Key lockable door
7. Acceptable products:
    a. LifeSafety Power FPO150/250-2D8P2M8NL4E8H1
    b. Owner approved equivalent

2.7 Credential READERS

A. Credential Reader

1. Provide credential readers, as indicated in the drawing set.
2. Reader shall be capable of reading HID proximity credentials and allow for future smart card technology.
3. Reader housing shall be weather-resistant and operate in temperatures from -35° to 66° C (-31° to 150° F).
4. The reader shall be equipped with a multicolor LED indicator and one audio indicator to provide positive user feedback.
5. Reader shall have a Wiegand interface.
6. Reader shall be equipped with a tamper switch that detect cover and mounting removal.
7. Approved products:
    a. HID #920L multiCLASS SE RP40
    b. Owner approved equivalent

2.8 CABLE AND CONDUCTORS

A. RS-485 Cables

1. Provide shielded twisted pair wiring for RS-485 cables.
2. Cable to be constructed with 24 AWG stranded wire.
3. Cable to consist of one twisted pair of wires.
4. Cable to be shielded with 100% aluminum foil polyester tape and 90% tinned copper braiding, with a 24 AWG stranded drain wire.
5. The nominal impedance shall be 120 ohms.
6. The nominal velocity of propagation should be at least 66%.
7. The nominal conductor-to-conductor capacitance shall be less than 43 pF/m.
8. Jacket to be plenum rated for spaces rated as air plenums and white in color.
9. Acceptable products:
    a. Belden 9841 – for non-plenum applications
    b. Belden 82841 – for plenum applications

c. Approved equivalent.

B. Power Cable (Cable Type A and B)

~~B. Power Cable (Cable Type A and B)~~

1. Provide DC power and signaling cables for end devices.
2. Cable shall be constructed with a minimum 18 AWG stranded wire.
3. Provide an appropriate number of conductors to satisfy the access control system manufacturer's installation requirements.
4. Jacket to be plenum rated for spaces rated as air plenums and white in color.
5. Acceptable products:
   a. Non-plenum environments:
      1) Belden 5300UE – 2-conductor cable
      2) Belden 5302UE – 4-conductor cable
      3) Belden 5304UE – 6-conductor cable
      4) Belden 5306UE – 8-conductor cable
   b. Plenum environments
      1) Belden 6300UE – 2-conductor cable
      2) Belden 6302UE – 4-conductor cable
      3) Belden 6304UE – 6-conductor cable
      4) Belden 6306UE – 8-conductor cable
6. Approved equivalent

PART 3 - EXECUTION

3.1 INSTALLATION

A. General

1. The Contractor shall investigate the Site and become thoroughly familiar with the existing ACS system. All ACS system processing components shall be installed and tested for proper communications before any portal is cut over to the ACS system.

B. Each ACS portal shall not be cut over until:

1. Owner is notified of the cut-over and agrees to the cut-over date.
2. The portal devices can be installed, connected and tested on the system.
3. The security levels are determined by the Owner and the security programming is complete.

C. Install security system in accordance with equipment manufacturer's written instructions and complying with applicable portions of the IBC and NECA's "Standard of Installation."

D. All testing of all portals shall be observed by an Owner or designee. The person observing the testing shall sign and date (including time of day) all forms as required proving that the test was witnessed.

E. Any disruption of service to the ACS must be coordinated with the Owner with a minimum 72 hour advance notice.

F. The Contractor shall maintain full functionality of existing ACS during installation of this expansion. The Contractor shall work with an Owner and coordinate requirements for system transition.

G. Graphics

1. The Contractor shall create and install all graphics needed to make the system operational.
2. The Contractor shall create and install the graphic maps to be linked to alarm points for the ACS.
3. Graphic maps shall have sufficient level detail for the system monitoring personnel to assess alarms.
4. Maps shall be updated or created so that each new alarm point is part of an overall map view showing the relative location within the building or site, and a secondary map that shows a greater level of detail. The device in alarm shall be linked to the top level map so that the person monitoring the system can assess the device in alarm state.
    a. Maps shall be integrated with the Video Surveillance System described in the Division 28 specifications.
    b. Upon alarm, the system shall call up a camera view providing visibility of the area where the alarm occurred.

H. Data Entry:

1. The Contractor shall enter all data needed to make the ACS fully operational. Entered materials may include contract documents, Contractor's field surveys, and all other pertinent information in the Contractor's possession required for complete installation or update of the ACS database.

3.2 LABELING

A. General: All devices, cables, conduits and cabinets shall be labeled in accordance with NFPA 70 National Electric Code and ANSI/TIA-606.

3.3 INSTALLATION STANDARDS

A. The Contractor shall install the ACS expansion 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. Components within the system shall be configured with appropriate service points to pinpoint system trouble in less than 20 minutes.

B. The Contractor shall install materials and equipment in accordance with standards for safety and shall comply with the most stringent code.

3.4 GROUNDING

A. Cable Shields: All coax shields and pair shields shall be grounded at one (1) point only. Cables that originate from processing equipment and serve field devices shall be grounded to the signal ground terminal in the processing equipment

3.5 SYSTEM TESTING

A. The Contractor shall be responsible for creating a testing plan for completion prior to go-live of the expanded areas of the system. Testing Plan shall be submitted to Owner for approval prior to commencement of testing.

B. During testing, the Contractor shall promptly correct all problems encountered, providing field service personnel appropriately trained for the types of problems encountered. Prior to cut over of the first portal, the door configuration databases must be completely populated.

C. Local Test:

1. Upon completion of work at portal, download the cardholder and door configuration databases and test each portal device for specified functionality with the test cards. Access requests are to be based on field processor decisions and valid site codes with communications to the field processor disabled. One (1) of the test cards shall be disabled/enabled during the test. This test should prove the basic integrity of the Portal Interface and the wiring and terminations between the field processor and the portal devices. Upon successful completion of the test, the portal shall be in service, controlled by the Access Control system.

3.6 TRAINING

A. No training is required, other than to familiarize the Owner with the system modifications.

3.7 ACCEPTANCE

A. Final acceptance will be withheld until the following activities have been successfully completed:

1. Acceptance of all submittals.
2. Delivery of final documentation.
3. Successful testing.
4. Successful training and demonstration, including operation of systems using the manuals, if called for in these specifications.
5. Purging of Contractor User privileges.

END OF SECTION 28 13 13

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