SECTION 28 10 00

ELECTRONIC ACCESS CONTROL AND INTRUSION DETECTION

(Part of the Work for Section 260001)

PART 1 - GENERAL

1.1 GENERAL PROVISIONS

A. Attention is directed to the GENERAL REQUIREMENTS AND COVENANTS - DIVISION I, and the SPECIAL PROVISIONS - DIVISIONS IIA and IIB, which are hereby made a part of this Specification Section.

B. Examine all Drawings and all Sections of the Specifications for requirements and provisions affecting the Work of this Section.

1.2 TRADE CONTRACT REQUIREMENTS

A. Work of this Section is part of the Electrical Trade Contract. Refer to Section 26 00 00 "Electrical Trade Contract Requirements" for additional information about this Trade Contract.

1.3 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.4 SUMMARY

A. This section provides specifications for the installation of Electronic Access Control System (ACS), Intrusion Detection System (IDS) and related components.

B. Related Sections:

1. Section 08 71 00 Door Hardware
2. Division 21 Fire Suppression
3. Division 26 Electrical
4. Division 27 Communications
5. Division 28 Electronic Safety and Security

1.5 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

B. Field Test Reports:

1. Upon completion and testing of the installed system, test reports shall be submitted in booklet form and electronic media showing field tests performed on, and adjustments made to each component and field tests performed to prove compliance with the specified performance criteria.
2. Indicate and interpret test results in written form and verbally to Engineer for compliance with performance requirements at a pre-scheduled meeting.

C. Battery calculations to show the expected loads and backup duration for power supplies and UPS devices for active AC/ID equipment.

D. Security Subcontractor is responsible to prepare and submit as required to the Authority Having Jurisdiction (AHJ) and information to obtain an Electronic Locking Mechanism permit.

1.6 SYSTEM COORDINATION

A. The Security Subcontractor shall completely coordinate relevant work of trades/systems including, but not limited to:

1. Door Hardware
2. Fire Alarm System
3. Electrical Systems(s)
4. Telecommunications System(s)

B. Electric Locking Mechanisms

1. The Security Subcontractor and Door Hardware Subcontractor shall coordinate door hardware, door and doorframe design.
2. The Security Subcontractor shall verify specified door hardware is appropriate for the security application and verify the sequence of operations for each access controlled opening.

C. Fire Alarm and Life Safety

1. The Security Subcontractor shall coordinate the (ACS) design with the life safety consultant to ensure compliance with applicable codes and requirements.
2. This includes, but is not limited to:
   a. Fire alarm interface
   b. Fail safe/fail secure locking mechanisms
   c. Delayed egress

1.7 DESCRIPTION OF WORK

A. General Requirements

1. Provide labor, materials, tools, equipment, and services for a complete security system as indicated and in accordance with provisions of the contract documents.
2. Although such work is not specifically indicated, provide supplementary or miscellaneous items, and devices incidental to or necessary for a sound, secure and complete installation.
3. All system devices and components included shall be compatible.
4. Units of the same type of equipment shall be products of a single manufacturer. Material and equipment shall be new and currently in production. Each major component of equipment shall have the manufacturer's model and serial number in a conspicuous place.
5. Provide workstations with the minimum requirements as stated by the manufacturer or the IT department, whichever is greater, based on the design herein and within the Contract Documents.

B. The Electronic Security System (ESS) shall include ACS and IDS sensors in the locations shown on the Contract Drawings. The type, location, quantity and connectivity of these devices for the facility are shown on the Contract Drawings.

C. The ACS and IDS shall be interfaced with the Fire Alarm System (Fire Alarm System by Fire Alarm Subcontractor) as required to comply with building code requirements.

D. The Security Subcontractor shall program the ACS to include graphical maps that present a dynamic and consolidated view of security applications including:

1. Event Monitoring with Command and Control

a. View access control (ACS), video, ALPR, intrusion and other events including unlocking doors, controlling cameras and managing alarms.

2. Monitoring and Control

a. Deploy maps that present a dynamic and consolidated view of security applications

b. View live or recorded video, ACS events with cardholder pictures, and ALPR hits with license plates

c. Control cameras and unlock doors

d. Highlight an area within a map to instantly populate display tiles with associated cameras

3. Embedded Map-Based Alarm Management

a. When alarms are triggered, operators receive real-time visual cues that instantly draw their attention to the precise location of alarms. Once there, operators can quickly zoom through multiple layers to get a closer and more detailed view with video. Operators respond to alarms, either acknowledging them directly from the map or forwarding them to guarantee a response.

4. Alarm Management

a. View alarms as they are triggered in real-time directly from your maps

b. Manage alarms triggered across the facilities, sites, and geographic locations

c. Receive instant visual notifications the moment alarms are generated

d. Respond to alarms directly within your maps: acknowledge, forward, or snooze alarms

e. Asses the validity of alarms on the fly with instant access to correlated video

f. Centralize map-based alarm management

E. Emergency power will be utilized to power the ACS/IDS system's field panels and control components as required throughout the facility.

F. The ACS supplied by the Security Subcontractor shall support functional integration of subsystems through identified subsystem interfaces as specified herein. This shall include the integration to the Video Management System (VMS) to include video call up and recorded alarm video tagging on the ESS upon 'Door Forced Open' and 'Door Held Open' alarm conditions as well as other programmed event driven events. These may include but not be limited to an invalid access control credential presented at a reader and monitor points which when alarmed, call up video.

G. The ACS shall support point identification from each device, access control transactions, where required, in a distributed processing format and communications interfaces, plus support applicable wiring and cable between devices.

H. Access denial alarms shall be communicated directly to the field control panels. Intrusion alarms on perimeter doors during normal operating hours shall report to the field control panels. alarms, both internal area and point alarms, in addition to card access denials and intrusion detection points, shall be immediately reported as alarms. Field panels will transmit alarms to the head end immediately.

1.8 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 2 years experience installing similar equipment.

B. Units of the same type of equipment will be products of a single manufacturer. Material and equipment will be new and currently in production. Each major component of equipment will have the manufacturer's model and serial number in a conspicuous place.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer’s labeled packages. Store and handle in accordance with manufacturer’s requirements, in a facility with environmental conditions within recommended limits.

1.10 WARRANTY

A. Manufacturer’s Warranty: Submit manufacturer’s standard warranty.

1.11 PROJECT CONDITIONS

A. Inspect locations where installation work will be performed and verify that conditions found are in accordance with the Contract Drawings and are acceptable for installation work. Report discrepancies in writing to the Engineer requesting clarification.

B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.12 ELECTRONIC SECURITY SYSTEM COMPONENTS

1. Visitor Management System

a. The system shall include the following services:

i. Comprehensive background checks including:

a) Sex offender registry check

b) 3-point background check that references federal and state criminal databases.

ii. Custom exclusion lists

iii. Emergency alerts

b. The system shall include the following equipment:

i. Public-Use All-In-One PC running Windows Enterprise with software pre-installed. 4GB RAM, 1.6Ghz Intel Celeron processor and 128GB SSD. 2 USB ports (used by printer and driver license scanner).

a) Front-facing HD camera.

b) Projective Capacitive Touch LED Touchscreen.

c) Custom stand.

ii. Visitor management annual access fee

a) Provide one year annual software access fee. Renewal fee is due on the anniversary month of purchase. Renewal fee will be the responsibility of the Owner.

b) Alert monitoring service and technical support shall be included.

iii. Hardware and Software

a) Provide the all-in-one workstation that includes the monitor, and integrated keyboard and software

iv. ID Scanner

a) ID scanner for state issued identification cards.

v. Label Printer

a) Printer for visitor badges or student tardy passes.

vi. Visitor Badges Box

a) White visitor badges (4 rolls/300 badges per roll).

b) Self-expiring badge labels.

vii. Database Activation Fee

a) One-time fee for provisioning and activating database storage (per location).

viii. Shipping and Handling Fee

a) Required on new orders.

ix. Remote Installation And Training Fee

x. Remote web- and phone-based installation and training (per location).

2. Software Development Kit (SDK)

a. The ACS shall permit custom integration with other third party systems through an SDK. SDK shall support the OBIX communication protocol and interface directly with the Niagara Framework for support of additional communications protocols.

B. Card Readers:

1. Card readers and adjunct devices shall be provided as shown on the drawings.

a. Provide field panels and alarm input and output devices connected to the security management system via Local Area Network (LAN).

b. The Security Subcontractor shall coordinate network and IP address requirements with Owner to identify the Media Access Control (MAC) address (Layer 2) of each provided device, the location to be installed, and the port configuration needed for communication.

c. Provide labor, materials, tools, equipment, and services for a complete system as indicated and in accordance with provisions of the contract documents.

d. Although such work is not specifically indicated, provide and install supplementary or miscellaneous items, and devices incidental to or necessary for a sound, secure and complete installation.

2. Card readers shall use unique coded data stored in a compatible credential card as an identifier. Communications protocol shall be compatible with the local processor.

3. The card readers shall include an LED or other visual indicator display. The display shall indicate power on/off, and whether user passage requests have been accepted or rejected.

4. The card reader shall respond to passage requests by generating a signal to the local processor. The response time shall be 800 milliseconds or less from the time the card reader finishes reading the credential card until a response signal is generated.

5. The card reader shall be powered from the location of the Security Subcontractor's panel(s) source as shown and shall not dissipate more than 150 watts.

6. Card readers shall be suitable for appropriate mounting as indicated on the

Contract Drawings and Schedules.

7. Card readers will utilize proximity technology and work such that upon presentation of a valid ACS card, the unique card data shall be transmitted to an associated control panel where the data is compared to an authorized user database and access is approved or rejected accordingly.
    a. A valid authorization will activate operation of the electric lock and shunt the door status switch. The alarm shunt will not affect supervision of the detection circuit.
    b. Coordinate with owner on card format and other pertinent details.
8. Card readers shall support multi-technology 125 KHz prox and 13.56 MHz contactless smart card technologies.
9. Card readers shall be compatible with existing credentials.
10. Singular doors, which utilize card access and a video intercom system shall utilize an integrated solution of an intercom with an embedded card reader if manufacturer products can accommodate.
11. Provide one enrollment reader as specified on the Contract Documents.
12. Shall support Open Supervised Device Protocol (OSDP) for secure, bidirectional communication.
13. Card readers shall support Double Tap Reader Toggle to allow for toggling the reader between different reader modes after a valid card is presented twice to a reader.
    a. Double Tap Reader Toggle shall function as stated below:
        i. When a authorized credential is presented to a reader and double taps, the reader shall unlock for a predetermined time.
        ii. After the predetermined time, the door shall lock and revert back to a normal card reader operation.
        iii. During the predetermined time of unlock, the lockdown alarm shall take precedence over the status of the door and secure the door.
            a) After the lockdown is cleared, the door shall revert to normal card reader operation.
14. Card readers at overhead doors shall be used to enable the overhead door opener wall button.
    a. Card readers and overhead door buttons shall function as stated below.
        i. When an authorized credential is presented to a reader, the reader shall enable the door operator button to open the door.
        ii. “Stop” and “close” shall be enabled at times and not require card reader authorization for operation.
15. Card readers at doors with an audible alarm shall be integrated with the audible alarm to disable the audible alarm from generating an alarm condition upon presentation of a valid credential.

C. Credentials:
    1. Provide 500 compatible credentials.
    2. Provide 2 compatible credentials in each Knox box.

D. Door Position Switch (DPS)

1. Door position switches shall be provided under the work of Division 28 unless otherwise noted.
2. Recessed door position switches shall be installed on select doors as indicated on the Contract Drawings.
3. Each door position switch (except those on double doors) shall be configured as a separate alarm point.
4. The contacts shall activate when a disturbance in the magnetic field occurs. The door position switches shall be rated for a minimum lifetime of one million operations.
5. Door position switches shall be as follows:
    a. Industrial type switches for overhead doors.
    b. Recessed type switches for swing doors.
    c. Plunger type switches for frameless glass doors:
6. The DPS at card reader controlled locations serve to indicate the open/closed status of the associated door and shall establish the basis for reporting a door-propped or unauthorized entry condition.
    a. Security Subcontractor is responsible for coordinating the contact configuration (SPDT) (DPDT) and rating for door status switches, and for connection of switches with the ACS.

E. Latch Bolt Monitor Switch (LBM)

1. Latch Bold Monitor Switches (LBM) shall be provided under the work of Division 08 unless otherwise noted.
2. Latch Bold Monitor Switches (LBM) shall be provided in selected door hardware, as indicated on the Contract Drawings and Schedule.
3. The Latch Bolt Monitor Switches shall monitor whether the latch is extended or depressed and shall establish the basis for reporting a door-propped or unauthorized entry condition.
4. The Security Subcontractor is responsible for the wiring and connection of the switches to the ACS.

F. Electric Locking Devices

1. All electrified door hardware shall be provided under the work of Division 08 unless otherwise noted.
2. Electrified door hardware for card reader controlled doors will include electrified locksets, electrified hinges, electric exit devices, and electric power transfers as shown on the drawings.

G. Request to Exit Devices (REX)

1. Request to exit devices (REX) shall be installed in selected protected areas of the facility having card access control, as indicated on the Contract Drawings and Schedule.
2. The request to exit device shall shunt the alarm initiated from the door contact upon egress. Shunting of the alarm shall be accomplished by connection of the REX to an appropriate input on the field control panel. This input shall be programmed to shunt the door contact upon activation of the REX device.
3. Request to exit devices, may depending upon location, be a power device or a mechanically activated micro switch located within a panic exit device or mortise

lockset.

4. If the door at which the request to exit device is installed is forced or held open, an audible alarm shall sound. This may be accomplished by an integrated sounder within the request to exit device or may be a separate audible device as specified elsewhere in this specification.

5. Shall be white and color and include a trim plate.

H. Duress Sensors

1. Duress sensors shall be installed as indicated on the Contract Drawings and Schedules.

2. Duress sensors shall be wired to the field panel input by individual device and shall not share inputs with other devices.

3. Duress sensors shall be powered so that in the event of activation, the LED shall latch, indicating that the sensor has been activated. Reset of the LED shall only be by output activation from the field control panel by an ACS operator through the ACS software.

4. Duress sensors shall receive their power from the auxiliary power supply and shall be connected to an individually fused output that shall be controlled by an auxiliary output from the field control panel. The controlled output shall be used to reset the duress sensor LED after the sensor has been activated.

5. Lockdown buttons, duress buttons and door release buttons, when co-located, shall be of differing styles and separated to protect against accidental triggering.

I. Door Release Button

1. A door release button shall be installed as indicated on the Contract Drawings and Schedules.

2. The door release button, when activated, shall trigger an event in the ACS, which shall unlock the associated door.

3. The door release buttons shall be wall or under desk mounted as indicated on the Contract Documents.

4. Lockdown buttons, duress buttons and door release buttons, when co-located, shall be of differing styles and separated to protect against accidental triggering.

5. The door release button for unlocking stairwell doors shall be as follows:

a. Wall mounted

b. Include a cover with a horn

c. Be momentary and illuminated

d. Be clearly labeled as “Emergency Exit” or “Push to Exit”

J. Electromagnetic Door Holder

1. Electromagnetic door holders will be installed on select doors as indicated on the Fire Alarm Drawings.

2. Electromagnetic door holders shall be specified and provided by Division 08 and powered under the work of Division 28 21 00 Fire Detection and Alarm.

3. Each electromagnetic door holder shall be configured to be de-magnetized upon activation of the Lockdown Button and Intrusion Detection System. Magnetization shall not occur until reset by either system.

4. The Fire Alarm System and security system will include provisions for each system

to monitor the other so that responses are coordinated.

5. The Fire Alarm System will control hold open doors, and when receiving a lockdown signal will release the doors to be closed.

6. The security system will monitor the fire alarm and will lock or unlock doors accordingly.

K. Lockdown Button

1. The lockout button, when activated, shall trigger an event in the ACS, which shall lock electrified doors, disable the card readers and door release functions. Cards of security personnel shall continue to work on the locked out readers during a lockout situation. When activated, the lockout buttons shall generate an alarm condition on the ACS monitors and provide VMS call up of both interior and exterior video cameras in the immediate vicinity of the lockout alarm. Events shall stay active until reset.

2. The lockdown button, when activated, shall cut power for electromagnetic door holding magnets. Magnets shall remain de-energized until reset.

3. Lockdown buttons, duress buttons and door release buttons, when co-located, shall be separated to protect against accidental triggering.

4. Lockdown buttons shall be wall and desk mounted

5. Wall buttons shall:

   a. Shall be red in color.

   b. Include a cover.

   c. Require a key to reset and illuminated.

   d. Be labeled as “Lockdown.”

6. Desk buttons shall:

   a. Have dual buttons.

   b. Include a key reset.

L. Audible Alarm Shunt Button

1. The audible alarm shunt button shall disable the audible alarm from generating an alarm condition.

2. The audible alarm shall be flush mounted in a single gang device box opening.

3. Wall buttons shall:

   a. Illuminate.

   b. Be labeled as “Push to Exit.”

M. Audible Alarm

1. Audible alarms shall be installed in selected areas of the facility, as indicated on the Contract Drawings and Schedules. The audible alarms shall sound a tone when an alarm is generated by a door forced open or door held open condition.

2. The audible alarm shall operate at 12 or 24VDC and consume 7mA at 12VDC and 11mA at 24VDC.

3. It shall be a continuous tone device generating a minimum of 86dB at 24VDC and 83dB at 12VDC.

4. The audible alarm shall be white in color and flush mount in a single or double gang device box opening.

5. The audible alarm shall be integrated with the card reader and/or audible alarm shunt button to disable the audible alarm from generating an alarm condition.

N. Motion Detectors

1. Shall be mounted as depicted on the Contract Drawings.
2. Shall be white in color and flush mount in a single gang device box opening.
3. Shall be dual technology, combining a PIR and microwave sensor.

O. Automatic Door Operators:

1. All automatic door operators shall be provided under the work of Division 08 unless otherwise noted.
2. The operators shall be coordinated with the access control system to ensure that the operator is not attempting to operate against a locked door.
3. The Security Subcontractor shall provide a 22/6 non shielded wire from each operator to the access control panel associated with the related card reader.
4. Sequence of Operation:
    a. The card reader initiates the open request.
    b. The ACS closes a dry contact linked to the door operator interface circuit.
    c. The door operator interface circuit sees the open request and releases the electrified door locking mechanism.
    d. After proper delay to ensure that the electrified lock has finished its action, the door operator interface circuit activates the automatic door operator.
    e. When the door closes, the door operator interface circuit senses that the door is closed and reactivates the electrified lock, securing the door.

P. Auxiliary Power Supply:

1. An auxiliary power supply is a power supply which is intended to provide power to glass break detectors, duress buttons and audible alarms and shall be installed at panel locations supporting these devices.
2. Where required, control of the auxiliary power supply outputs shall be wired to and controlled by auxiliary outputs from the field control panel in which the auxiliary power supply is associated with.
3. The auxiliary power supply shall also be supplied with an auxiliary power supply board. The auxiliary power supply board shall be mounted and wired into the auxiliary panel assembly.

Q. Equipment Enclosures

1. Enclosures shall be NEMA 4X rated as specified herein.
2. Enclosures shall be appropriately mounted using the manufacturer specified mounting equipment for each location specified on the contract documents.
3. Enclosures shall be appropriately sized to provide adequate space for the mounting of required equipment.
4. Enclosures shall be rigid fiberglass or stainless steel and have a full gasketed raised lid.
5. Latches shall be stainless steel and have padlock hasps.

R. Lock Power Supplies

1. Lock power supplies for egress panic hardware, delayed egress panic hardware and high in-rush current latch retraction panic hardware shall be provided by the work under Division 28. Coordination with door the door hardware specification 08 71 00 is required.
2. Lock power supplies shall be 24vdc and provide power to security related electromagnetic locks, electric strikes, electrified trim and electric mortise locks and shall be provided by the Security Subcontractor, unless noted otherwise.
3. The lock power supply shall be supplied with an auxiliary power supply board. The auxiliary power supply board shall be mounted and wired into the power supply panel assembly.
4. Power supply requirements:
    a. A switch and on/off indicator within the power supply cabinet.
    b. Four (4) hours of sealed gel battery backup to provide continuous operation during power failure.
        i. Provide batteries as required to provide specified battery backup time for a fully loaded power supply, regardless of the connected load.
    c. A battery charger to maintain the battery.
    d. Low battery and power fail contacts to monitor the status of the input power and the battery.
        ii. Connect each power supply low battery and power fail alarm as a separate alarm input into field panels.
    e. Key lockable wall mount metal enclosure with tamper switch.
5. Additional Power Supply Requirements
    f. The field panel power supply provides power only to field panels and shall not provide power for locks or other low voltage device.
6. Additional Electric Locking Mechanism Power Supply Requirements.
    g. Fail secure electric locking mechanisms shall remain locked during power failure and fire alarm conditions.
    h. Connect fail safe locking devices in accordance with applicable life safety codes to unlock automatically under the following conditions:
        i. Loss of power to the power supply.
        ii. Failure of the power supply
        iii. Fire alarm activation
    i. Provide power distribution boards with independently fused output relays and fire alarm control panel interface.
2. Additional Device Power Supply Requirements
    a. Provide device power supplies for other security system devices requiring power (e.g. card readers, local alarms and motion sensors.)
    b. Provide power distribution boards with independently fused outputs.

S. Tamper Resistant Screws

1. Provide appropriate screw heads for each application (e.g. countersunk heads for recessed cover plate screws and flat head screws for standard junction box covers).

2. The Security Subcontractor shall provide Torx® tamper resistant screws for:
    a. Junction boxes located above doors.
    b. Junction boxes located below ceiling height and/or within reach of hatch ladders.
    c. Security device cover plates.

T. Tamper Switches
1. Typically closed tamper switches to monitor the secure status of field panels, power supplies, terminal cabinets, power distribution units, and other associated cabinets and enclosures.
2. Fasten tamper switches within the cabinet to provide no access to the switch and fasteners when the cabinet is closed.
3. Provide independent monitoring of tamper conditions for each cabinet.
    a. Include the number of tamper switches in the total alarm input figures.

U. Credential Camera
1. Shall seamlessly integrate with the ID badging system.
2. Shall capture color pictures in HD quality.
3. Shall be desk mounted and connected to the workstation via USB.

V. Credential Printer
1. Print technology shall be direct-to-card dye-sublimation/resin thermal transfer
2. Print capabilities shall include:
    a. One-sided (simplex) or optional two-sided (duplex) edge-to-edge printing
    b. Full-color and monochrome printing capability in the same printer
    c. Alphanumeric text, logos and digitized signatures
3. Print resolution shall be at a minimum:
    a. Standard mode: 300 x 300 dots per inch; standard text, bar code and graphics printing
    b. High-quality mode: 300 x 600 dots per inch for enhanced text, bar code and graphics printing; 300 x 1200 dots per inch for enhanced text and bar code printing
    c. 256 shades per color panel
4. Print speed shall be at a minimum:
    a. Full-color: Up to 220 cards per hour, one-sided (YMCKT); up to 165 cards per hour, two-sided (YMCKT-K)
    b. Monochrome: Up to 1,000 cards per hour, one-sided (Black HQ)
5. Card capacity shall be at a minimum:
    a. Automatic feed: 100-card input for 0.030 in. (0.76 mm) cards; 25-card output standard
    b. Front exception card slot
    c. Separate reject location and holding tray (two-sided printer model only)
    d. Input hopper empty detection

6. Operating system support for printer driver
    a. Windows® 7 / Windows 8 (32 and 64 bit)
    b. Windows XP SP3 / Windows Server® 2003 R2 (32 bit)
    c. Windows Server 2012/2008 (64 bit)
    d. Microsoft Windows® Hardware Quality Labs (WHQL) certified
7. Included with printer
    a. Printer driver CD, Quick Install Guide and warranty
    b. Cleaning pen
    c. Cleaning roller spindle
    d. USB cable
    e. Power supply
    f. Power cord (region-specific)

W. Rack-mounted Uninterruptible Power Supply (UPS)

1. Provide a UPS to support 120% of the required load to allow for future load expansion and age related deterioration of the battery performance.
2. The UPS interface port shall have an RS-232 communications port and a 10 Base-T Ethernet for LAN management.
    a. Provide the necessary data connection, hardware and software to remotely monitor the UPS.
    b. Provide user configurable computer operating system shutdown capability.
    c. The control panel shall have a LED status display for load and battery bar graphs in addition to replace battery and overload indicators.
        i. Rack-mounted surge suppression shall be vertically mounted and made for this orientation.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Contactless Card Readers (CR) – Wall/ Mullion/ Keypad

1. HID Signo Reader
2. Honeywell Indala Multi-Technology Reader
3. Schalge Multi-Technology Reader
4. Or Approved Equal

B. Access Control Credentials

1. HID Seos
2. Honeywell OmniClass
3. Schlage Smart Credentials
4. Or Approved Equal

C. Request to Exit (REX) Devices and Associated Trim Plates

1. Detection Systems T-REX
2. Bosch DS160

3. Sentrol RCR
4. Or Approved Equal

D. Door Position Switches (DPS)
1. Interlogix
2. Honeywell
3. George Risk Industries
4. Or Approved Equal

E. Lock Power Supplies
1. Electric Locking Power Supply
    a. Securitron
    b. Altronix
    c. Securitech
    d. Or approved Equal
2. Electric Locking Auxiliary Power Supply Board
    a. Securitron
    b. Altronix
    c. Securitech
    d. Or approved Equal
3. Glass Break, Duress Button and Audible Alarm Auxiliary Power Supply
    a. Securitron
    b. Altronix
    c. Securitech
    d. Or approved Equal
4. Glass Break, Duress Button and Audible Alarm Auxiliary Power Supply Board
    a. Securitron
    b. Altronix
    c. Securitech
    d. Or approved Equal

F. Duress Sensors
1. Sentrol GE3040W
2. United Security Products Hub DL
3. Honeywell 270R
4. Or approved Equal

G. Audible Alarm
1. Patlite BK
2. Signalworks GPH1
3. Gentex GX91-PW

4. Or approved Equal

H. Motion Detectors

1. Bosch
2. Honeywell
3. GE
4. Or Approved Equal

I. Tamper Switches

1. Honeywell 955WH
2. Sentrol 3010
3. Seco-Larm SM-4301-TQW
4. Or approved Equal

J. Print Pocket

1. Hammond Manufacturing
2. Wiegmann
3. Marshall E. Campbell Co.
4. Or Approved Equal

K. Lockdown Button

1. Desk Mounted:
    a. Amseco-15B
    b. Schnap 100-017
    c. Alarm Controls TS-18
    d. Or Approved Equal
2. Wall Mounted:
    a. Safety Technology International STI SS2072LD-EN
    b. SDC Security 422U
    c. Alarm Controls TS-1
    d. Or Approved Equal

L. Audible Alarm Shunt Button

1. Alarm Controls
2. Dynalock
3. Essex
4. Or Approved Equal

M. Door Release Button

1. Desk Mounted:
    a. Assa Abloy TS-18
    b. Rutherford 909S
    c. Dormakaba 909

d. Or Approved Equal

2. Wall Mounted:

a. Safety Technology International STI SS2085EX-EN

b. SDC Security SDC-432KLDUR

c. Eaton

d. Or Approved Equal

N. Credential Camera

1. Logitech
2. Videology
3. Brother
4. Or Approved Equal

O. Credential Printer

1. Magicard
2. HID Fargo
3. Datacard
4. Or Approved Equal

P. Visitor Management System

1. Raptor Technologies
2. SchoolPass
3. Navigate 360
4. Or Approved Equal

PART 3 - EXECUTION

3.1 INSTALLATION

A. All security panels shall be wired through a dedicated power supply with battery backup.

B. All panels shall be designed and built with the following requirements and guidelines:

1. Enclosures shall be lockable with a tamper switch and installed in a manner to be accessible with clearance to fully open enclosure door.
2. Power to the data gathering panels is to be hardwired utilizing EMT or rigid conduit in accordance with the Electrical specifications.
3. A circuit from the Fire Alarm panel must be installed to each lock power distribution panel.
4. All panels and boards shall be installed in enclosure(s) suitable to their environment and have sufficient size and orientation to include system components.
5. Enclosures shall be installed on designated wall fields in a neat and compact manner to allow for future growth.
6. Field cabling shall enter the enclosure through a metal conduit properly terminated in the top of the enclosure. In no case shall the surface metal raceway be smaller than 4” x 4” in width and height.
7. Panels shall incorporate a metal backplane and/or fixed standoffs within the enclosure for the purpose of mounting components. The backplane may be solid

or perforated in nature and shall be one piece within the interior of the enclosure.

8. Line voltage connections to the interior of the enclosure shall be concealed by metallic raceway and/or boxes or terminated on terminals designed to prevent accidental contact by service personnel. Line voltage conductors shall enter the enclosure at the point nearest where it will be terminated and shall not be run in a low voltage raceway within the enclosure or supporting cable management for low voltage cable around the enclosure.

9. All components shall be mounted on the backplane. No components shall be mounted on the sides, top, bottom, or door of the enclosure. Exception: Indicator lights/LEDs showing the status of power or fault conditions may be mounted on/in the door to facilitate viewing of status indicators without having to open the enclosure.

10. All circuit board components shall be mounted to the backplane using metal or plastic standoffs. No double sided adhesive tape or mounting pads shall be used for mounting components. Standoffs shall be mounted to the backplane in a captive fixed manner so that removal of the board supported by the standoff can be accomplished without removing the entire backplane and without loss of the standoff or mounting hardware. Where full population of support equipment is not required due to device counts, standoffs shall be installed for a full configuration.

11. Raceways shall be provided within the enclosure for the purpose of routing and dressing cables within the enclosure. Raceways shall be plastic 'finger duct' appropriately sized for the amount of cable to be installed within. Covers for internal raceways shall be provided and installed. Where full population of support equipment is not required due to device counts, raceway shall be installed for a full configuration.

12. Each panel shall be labeled accordance with Owner standards. The label for each panel shall be posted on the exterior of the panel door.

    a. Each panel shall have a list of devices connected to it located on the inside cover.

    b. A detailed device layout drawing will be located on the inside of the panel door in an appropriate sleeve and keeper.

C. Adhesive mounted devices and components such as tie wrap mounting pads, shall not rely solely on the adhesive to fasten the device or component. The addition of a bolt or screw shall be installed through the adhesive mounted device to prevent the adhesive of the device or component from failing.

D. Field device cables shall only be run in metal raceway where not installed in a cable tray. No plastic raceway is permitted. Exception: where run in an underground environment, Rigid PVC Conduit (RNC) is permissible and shall be either schedule 40 or schedule 80 RNC.

3.2 FURTHER REQUIREMENTS

A. Provide and coordinate installation of special device back boxes and ACS/IDS field devices as shown on the security drawings and as specified in this section.

B. Coordinate with the Telecommunications Subcontractor for data network connections, IP address requirements, and telephone circuits as required.

C. Prepare systems for user operation.

1. The security system must be complete and ready to operate prior to Owner final acceptance of the system.

D. Coordinate with the Owner for system programming requirements.

E. Perform database programming as required to support the card reader, alarm point, surveillance system integration, and control panel configuration as required.

3.3 PROTECTION

A. Protect installed system from damage during construction.

END OF SECTION