

ELECTRONIC ACCESS CONTROL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. The term “Work” used throughout the section shall be defined as the security system for Housing & Food Service facilities at the Pennsylvania State University.
- B. The expanded system (Security System), as described herein, shall provide surveillance and controlled access for entry and other critical doors/areas using the existing Access Control System (ACS). New ACS equipment (PLY) shall be located in the LAN closet located in the basement floor IT closet as depicted on the security drawings.
- C. The security systems project shall include scope-of-work requirements for the Security Contractor, Electrical Contractor, Fire Safety Systems Contractor, TNS, and the Security Contractor. The Security Contractor will coordinate with the General Contractor, high voltage power, plywood backboards, riser sleeves, conduit stub-ups, junction boxes, and doors prepped for security devices shall be coordinated by the General Contractor and provided by others. The Owner shall be responsible for providing information to the Security Contractor for the programming of the ACS. The Security Contractor shall be responsible for provisioning and installation of all security related field devices, cables and equipment for the security system, coordination issues with the above Contractors; programming and training on the systems and shall report issues to the Consultant and/or Owner when clarification is required.
- D. Each section of the specification pertaining to the operational characteristics of the specified Security System may or may not include specific devices. Specified items are identified with the manufacturer’s name and the model number of the device. Unless noted, substitutions may not be made for specified components. The remainder of the equipment is to be suggested by the Security Contractor in his proposal. The Security Contractor should delineate between mandatory system components, suggested equipment upgrades and/or system improvements, and nonessential (or extra) items in the proposal.
- E. All work by the Security Contractor must meet all of the specifications. Each component in the proposed system shall be considered for its individual merits and for its contribution to the entire system. The Security Contractor must include specification sheets, and other literature and documents to support the equipment choices in the bid proposal.
- F. The security system is comprised of two main components: Access Control and fire tie-in.
 - 1. The access control system includes card readers, locking hardware and alarm sensors that shall monitor entry doors, stairwells, communication rooms, security closets and other critical areas.

2. Locations which must meet local fire code for egress shall be connected to a class “E” relay, (identified with a FT on the security drawings) from the fire panel. The fire relay will cut local power to exterior door locks for free egress.

G. Conduits, electrical power and junction boxes shall be provided and installed by Others. This shall include high voltage power, riser conduits, junction boxes and conduit stub-ups for individual devices.

H. All network infrastructure (Category 6 UTP) shall be provided and terminated by Others. The Security Contractor will be responsible for coordinating in the field locations with the Owner to deliver a “turn-key” project.

1.2 CONTRACTOR RESPONSIBILITIES

A. The Contractor shall obtain the best price for the specified equipment and to adhere to all deadlines.

B. The Contractor shall not install or de-install equipment on The Owner’s premises without prior approval.

C. The Contractor represents that all of the prices, terms, warranty, and benefits granted by the Contractor hereunder are comparable to, or better than, the equivalent being offered to any other customer. If the Contractor, during the term of this resulting contract, enters into arrangements with any other customers providing greater benefits or more favorable terms, the resulting contract shall thereupon be deemed amended to provide the same to The Owner.

D. The Contractor shall generate all shop drawings and information for the complete installation and wiring of the security systems. These drawings must be submitted to the Consultant and/or Owner for approval no less than two (2) weeks prior to installation of cable or equipment.

E. The General Contractor shall provide all required door hardware, where required.

F. The Contractor shall coordinate with the Owner and the Consultant on all security related issues and concerns. For clarification purposes, all issues and concerns should be documented and submitted to the Consultant and/or Owner.

G. The Contractor shall furnish all security equipment and materials whether specifically mentioned herein or not, to ensure a turnkey solution; and a complete, operating access control system. The Contractor shall provide a complete description of the proposed system operation/system configuration. The Contractor shall configure and program the security system(s) based on user requirements and/ or equipment capabilities at no additional cost to the University.

- H. The Contractor shall use all new and unused materials.
- I. The Contractor shall pass on to the Owner any Contractor reductions to list prices up to 120 days after product delivery.
- J. The Contractor shall attend all job meetings as required by the Owner and/or the Consultant, unless instructed otherwise.
- K. The Contractor shall provide a weekly status report. All issues and concerns pertinent to maintaining the construction schedule should be addressed in this format. All issues and concerns shall be noted in these documents for coordination with the appropriate parties. Issues that are not documented shall be considered solely the responsibility of the Contractor and shall not be a factor in the overall construction schedule.
- L. The Contractor shall be responsible for terminating devices onto the Owner's network.
 - 1. The contractor shall not be responsible for providing the network infrastructure which including switches, vertical optic cable or WAN connectivity.
 - 2. The contractor shall, provide and install all horizontal CAT-6 cable, patch cables and associated software.

1.3 SUBCONTRACTORS

- A. Contractor shall be responsible for the coordination with any related sub-contractors or Contractor to meet project deadlines. All sub-contractors must have the pre-approval of the Owner. A subcontractor shall be clearly defined as:
 - 1. The service or portion of service to be contracted out
 - 2. The scope of the proposed sub-contract
 - 3. The sub-contractors name
 - 4. The type of contract that exists between the Contractor and the subcontractor
- B. Permission to so employ shall in no way diminish the Contractor's liability and all conditions stated in this document shall apply to the Contractor's sub-contractors.
- C. Contractor shall provide a written agreement to the Owner with conditions from each subcontractor. The Contractor shall agree to work with the Consultant, sub-contractors, and third-party representatives nominated by the Owner.

1.4 NOT IN CONTRACT (NIC) WORK:

- A. Certain items necessary for a complete and operational security system shall not be provided by the Contractor. However, the Contractor is responsible for coordinating with the Owner for all NIC materials that are related to the Security Systems installation. These NIC items may include, but are not limited to:
 - 1. All high voltage cable runs and electrical outlets. But shall be responsible to make connections to any existing power on the security wall field.

2. All structural work, wall openings, platforms, railings, stairs, fire prevention and safety devices, rough and finished trim, painting and patching, carpets, floor coverings, computer floors, and heating, ventilating, and air conditioning systems.
3. All training is by others

1.5 SPECIAL CONFIDENTIALITY REQUIREMENT

- A. The Work is critical to the security of the Owner's facilities. All plans, specifications, software information and other documentary material and information about the Work are confidential information and must remain secure and confidential at all times. Confidentiality of information extends to Contractor's personnel and subcontractors who require disclosure to perform their portion of the Work.
- B. The Contractor shall keep track of all confidential information at all times and shall ensure that all copies are accounted for at all times. The Contractor shall not permit any persons to have access to the confidential information of the Work unless and until the Contractor has assured itself of the trustworthiness of such persons.

1.6 COORDINATED WORK

- A. Coordinate with the D-B team and related trades to schedule the Work and ensure a complete installation in accordance with the schedule to be outlined by the Owner.

1.7 SUMMARY

- A. The Owner requires a complete turnkey security system for the facilities. The Work shall include installation and commissioning of the following:
 1. Installation or upgrade of an Access Control System (ACS); provide all necessary hardware and labor.
 2. Furnish and install all wire and cable as required installing all equipment as specified herein.
 3. Furnish and install all required licensing for the existing ACS located at State College, PA to support the additional Wi-Q locks.
 4. All Wi-Q Portal Gateways and antennas shall be priced as an additive/alternate.

1.8 REFERENCES

- A. The Security System shall be installed in accordance with the most current version of and with all applicable revisions pertaining to all applicable national, state and local codes and standards including, but not limited to the following:
 - National Fire Protection Association, (NFPA 70)
 - National Fire Protection Association Life Safety Code, (NFPA 101)
 - Building Officials & Code Administrators International, Inc. (BOCA) National Building Code
 - Americans with Disabilities Act (ADA)
 - Underwriters Laboratories (UL) Applicable Standards for Safety

- Underwriters Laboratories (UL) Applicable Standards for Proprietary Security Systems •
Uniform Building Code, (UBC)

1.9 SUBMITTALS

- A. Submit Pre-fabrication Submittals in accordance with the D-B team's construction schedule.
- B. Pre-fabrication Submittals shall consist of Product Data, Shop Drawings, and a detailed proposed project schedule. Partial submittals shall not be accepted without prior written approval from the Consultant and/or Owner. All drawings shall be submitted on a 36"x24" sheet.
- C. Review of the Pre-fabrication Submittals by the Consultant and/or Owner is for purposes of tracking the Work and contract administration, and shall not relieve the Contractor of responsibility for any deviation from the Contract Documents, or from providing equipment and/or services required by the Contract Documents which were omitted from the Pre-fabrication Submittals.
- D. No portion of the Work shall commence nor shall any equipment be procured until the Consultant and/or Owner has approved the Pre-fabrication Submittals in writing. All Work shall be in accordance with the Contract Documents.
- E. A letter of transmittal identifying the name of the Project, Contractor's name, and date submitted for review shall accompany pre-fabrication Submittals along with a list of items transmitted.
- F. Product Data required as part of the Pre-fabrication Submittal shall include the following:
 1. Equipment schedules listing all system components, the manufacturer, model number and the quantity of each.
 2. General functional descriptions for each system.
 3. Manufacturer's data specification sheets for all system components, including any warranty information. Literature sheets containing more than one device or component model number shall be clearly marked to delineate items included in the Work.
 4. A complete list of cable and wiring types and sizes, as well as the manufacturer and model number for each.
 5. List of the maintained parts inventory to provide manufacturer recommended service and maintenance of the systems following installation and commissioning.
 6. Drawings showing location of all devices, system risers, IP address schemes, point-to-point terminations, and all necessary items required for the contractor to furnish a turnkey solution.

1.10 AS-BUILT DRAWINGS

- A. Before contract closeout, submit two (2) copies of the system As-Built drawings and documents to the Consultant and/or Owner for review (ARCH D). After the As-Built drawings are approved by the Consultant and/or Owner, the Contractor shall submit two (2) approved copies to the

Owner (ISO A1). The contractor may also provide these drawings in AutoCAD format electronically.

- B. The as-built documentation shall include all the information included in the shop drawings (See section C) as built. The as-built documentation is intended to assist the owner and contractor's maintenance staff in routine system management.

1.11 PROCEDURE FOR RESUBMITTING

- A. Clearly identify changes made other than those specifically requested by the Consultant and/or Owner when resubmitting Shop Drawings. Changes shall be clouded or similarly highlighted as coordinated with the Consultant and/or Owner. Only changes that have been specifically requested by the Consultant and/or Owner or have been clouded by the Contractor will be reviewed on re-submittals.
- B. Any drawing sheets added to the re-submittal shall be clearly identified and clouded and shall not change the sheet numbering scheme for the issued Shop Drawings.
- C. The Contractor shall be responsible for any delays caused by the re-submittal process.

1.12 SEQUENCING AND SCHEDULING

- A. The Contractor shall review the D-B team construction and completion schedules and shall coordinate execution of the scope of work as defined in this document and all other Security Contract Documents with all other contractors and service providers engaged by the Contractor, the Owner and their representatives for work related to these facilities.
- B. The Contractor shall submit a detailed schedule with the proposal identifying the following milestones:
 1. Required dates for completion of work by the Owner.
 2. Install building systems, components and all protective devices as specified herein. All building systems shall be individually identified.
 3. System completion.
 4. Final test.
 5. As-built documentation submittals.

1.13 WARRANTY

- A. Provide a one-year warranty on the Work. If, within one year after the date of final acceptance of the Work or within such longer period of time as may be prescribed by law, or by the terms of any applicable special warranty required by the Contract Documents or provided by a manufacturer, any of the Work or equipment is found to be defective or not in accordance with the Contract Documents, the Contractor shall correct it promptly including all parts and labor after receipt of notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This obligation shall survive termination of

the Contract. The Owner will give such notice promptly after discovery of the condition. Such notice shall be provided by Owner representatives, to be identified either verbally or in writing.

- B. Nothing contained in the Contract Documents shall be construed to establish a shorter period of limitation with respect to any other obligation, which the Contractor might have under the Contract Documents or any manufacturer's warranty. The establishment of the time period of one year after the date of final acceptance of the Work or such longer period of time as may be prescribed by law or by the terms of any warranty required by the Contract Documents, relates only to the specific obligation of the Contractor to correct the Work or equipment, and has no relationship to the time within which its obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to its obligations other than specifically to correct the Work or equipment.
- C. The completed Work as specified herein, including all materials and labor, but excepting any existing devices and equipment which are incorporated in the completed Work, shall be warranted by the Contractor for a period of not less than one year, to be free from defects in design, workmanship and materials. Further, the Contractor shall warrant that the completed systems including all components (except those, which are existing or provided by others) are of sufficient size and capacity to fulfill satisfactorily the requirements of these specifications.
- D. The one-year Warranty period shall begin upon final acceptance of the completed Work or commencement of beneficial use by the Owner, whichever occurs first.
 - 1. For purposes of Warranty consideration, final acceptance shall be defined as the date on which the Owner formally acknowledges acceptance of the completed Work.
 - 2. For purposes of Warranty consideration, beneficial use shall be defined as the date on which the Owner commences normal operation of the completed systems.

1.14 WARRANTY SERVICE

- A. In the event that defects in the materials and/or workmanship are identified during the Warranty period, the Contractor shall provide all labor and materials as may be required for prompt correction of the defect.
- B. During the Warranty period, the Contractor shall, upon receipt of a request for service from the Owner, deploy service personnel to the Owner's premises within four hours to initiate corrective action.
- C. All Warranty service and repair work shall be performed by personnel, who have been trained, certified and is experienced in the operation and maintenance of the installed system(s).
- D. Unless otherwise requested by the Owner, Warranty service shall be performed during normal business hours (8:00 AM to 5:00 PM), Monday through Friday, exclusive of Holidays. In the event that the Owner requests Warranty service to be performed during other than normal

business hours, the Contractor shall be compensated for such service at one-hundred and fifty percent (150 %) of his normal hourly service rates as listed in the bid proposal for this project.

- E. Warranty service shall include the replacement of all parts and/or components as required to restore normal system operation. In the event that system parts or components must be removed for repair, it shall be the responsibility of the Contractor to furnish and install temporary parts and/or components as required to restore normal system operation until the repaired parts or components can be repaired and re-installed.
- F. It shall be the responsibility of the Contractor to maintain an inventory of spare parts or to arrange for manufacturer parts support as required ensuring correction of all critical component failures or malfunctions within 48 hours of the Owner's request for service. Critical parts shall be defined as those, which govern or affect the normal operation of more than one field device.
- G. The Contractor's Warranty obligation shall include correction of any software/firmware defects, which may be identified during the Warranty period. Any failure of the software/firmware to perform as specified by the software/firmware manufacturer at the time of final acceptance shall be defined as a software/firmware error.
- H. In the event that the Contractor determines and successfully demonstrates to the Owner that service or repairs are required as a result of misuse, abuse or abnormal wear and tear, the Contractor shall be compensated for such service or repairs at the Contractor's hourly rates as listed in the bid proposal for the Project. Similarly, such compensation to the Contractor shall apply in the event that repairs are required for devices and equipment not provided by the Contractor but incorporated in the completed systems.
- I. Immediately following the completion of a Warranty repair or service call, the Contractor's service personnel shall submit a written report to the Owner which details the service work performed, the cause of the trouble, and any outstanding work which is required to restore complete and normal operation.

1.15 SECURITY SYSTEM ADDITIONS AND CHANGES

- A. The Contractor shall be responsible for providing additional Work and changes to the Work during the Warranty period.
- B. If required, the Contractor shall use an owner-preferred, independent electrical and/or hardware contractor to perform additional work where applicable.
 - 1. The owner-preferred, independent contractor shall charge the Contractor at the same rates charged to the Owner.
 - 2. The Owner reserves the right to expand or add to the system during the warranty period using firm(s) other than the Contractor for such expansion without affecting the Contractor's responsibilities, providing that the expansion be done by an authorized dealer or agent for the equipment or system being expanded.

- C. The Contractor shall perform preventative maintenance during the warranty period. Submit a list of items to be included in the preventative maintenance program. The list shall include maintenance to each item, the frequency of such maintenance, and the amount of time to be spent on each item for maintenance. Preventative maintenance shall include, but not be limited to, the following:
 - 1. Annual Preventative Maintenance
 - 2. Semi-Annual Preventive Maintenance
 - 3. Quarterly Preventive Maintenance

- D. Provide written notice to the Owner documenting any work performed during the warranty period, including any preventative maintenance work performed.

- E. Provide loaner equipment for any equipment not field repairable. Such loaner equipment shall be in working order and the functional and technical equivalent of the item replaced. Provide loaner equipment for any equipment not field repairable and that is fully compatible with all associated equipment.

- F. Loaner equipment for system components (example: badge printer, workstation, etc.) that must be shipped from the manufacturer or distributor shall be on site and operational within 48 hours of the component failure. Furnish lists of equipment that will require shipment from the manufacturer or distributor and lead times associated with that equipment.

1.16 REPAIR OR REPLACEMENT SERVICE

- A. Repair or replacement service during the warranty period shall be performed in accordance with the following schedule:
 - 1. Schedule A - 7 days, 24 hour, four (4) hour response time.
 - Schedule A shall apply for major system components, including, but not limited to the system server(s) and control panels (CP).
 - 2. Schedule B - 8:00 a.m. - 5:00 p.m. business days, excluding holidays, (4) hour response time.
 - Schedule B shall apply for all other components and devices.
 - Include an after-hours labor rate for any warranty service required during hours not covered under schedule B.
 - Service may be provided the next business day if a service call from the Owner occurs after 1:00 pm.

- B. Failure to Perform Service
 - 1. **Schedule A Components:** The Contractor shall provide fourteen (14) days of additional total system warranty (at no additional cost to the Owner) for every two (2) consecutive days of system or device failure. If the Contractor is unable to restore system operation within two consecutive days of a failure, the Owner reserves the right to require the Contractor to provide on-site manufacturer's service technicians at no additional cost to the Owner.

2. **Schedule B Components:** The Contractor shall provide seven (7) days of additional total system warranty (at no additional cost to the Owner) for every two (2) consecutive days of system or device failure.
3. If the Contractor is unable to restore system operation during the warranty period within two (2) business days of a system failure, the Owner reserves the right to require the Contractor to provide on-site manufacturer's service technicians at no additional cost.

1.17 FAILURE TO PERFORM SERVICE

- A. Schedule A Components: The Contractor shall provide fourteen (14) days of additional total system warranty (at no additional cost to the Owner) for every two (2) consecutive days of system or device failure. If the Contractor is unable to restore system operation within two consecutive days of a failure, the Owner reserves the right to require the Contractor to provide on-site manufacturer's service technicians at no additional cost to the Owner.
- B. Schedule B Components: The Contractor shall provide seven (7) days of additional total system warranty (at no additional cost to the Owner) for every two (2) consecutive days of system or device failure.
- C. If the Contractor is unable to restore system operation during the extended maintenance period within two business days of a system failure, the Owner reserves the right to require the Contractor to provide on-site manufacturer's service technicians at no additional cost.

PART 2 - ACCESS CONTROL GENERAL

2.1 SUMMARY

- A. This Section includes a security access system consisting of the addition or expansion of the existing field installed Controllers and intrusion detection monitored 24hr via central monitoring and fire tie-in.

The security access system could have the following:

1. Access Control:
 - a. Regulating access through doors
 - b. Surge and tamper protection
 - c. Alarm annunciator
 - d. Push-button switches
 - e. Monitoring of field-installed devices
 - f. Reporting
2. Fire Tie-In:
 - a. Automatic door lock release at egress locations as required by local fire code

- B. Related Sections include the following:

1. Section "Video Surveillance" for interface devices and communications protocol to integrate video camera selection and positioning into security access system.

2.2 SYSTEM DESCRIPTION

- A. System consist of application software, and field-installed Controllers, connected by a highspeed electronic data wiring connecting all devices.

- B. Network connecting the ACS shall be Ethernet using TCP/IP.

- C. Contractor / Integrator Qualifications

1. The security system integrator shall have been regularly engaged in the installation and maintenance of integrated access control systems and have a proven track record with similar systems of the same size, scope, and complexity.
2. The security system integrator shall supply information attesting to the fact that their firm is an authorized Software House 9000 product certified integrator.
3. The security system integrator shall supply information attesting to the fact that their installation and service technicians are competent factory trained and certified personnel capable of maintaining the system and providing reasonable service time.
4. The security system integrator shall provide a minimum of three (3) references whose systems are of similar complexity and have been installed and maintained by the security system integrator in the last five (5) years.

2.3 ACS REQUIREMENTS

Security access system shall use a single database for access-control and credential-creation functions.

- A. Distributed Processing: System shall be a fully distributed processing system so that information, including time, date, valid codes, access levels, and similar data, is downloaded to Controllers so that each Controller makes access-control decisions for that Location. Do not use intermediate Controllers for access control. If communications to Central Station are lost, all Controllers shall automatically buffer event transactions until communications are restored, at which time buffered events shall be uploaded to the Central Station.

- B. System Network Requirements:
 - 1. Interconnect system components and provide automatic communication of status changes, commands, field-initiated interrupts, and other communications required for proper system operation.
 - 2. Communication shall not require operator initiation or response, and shall return to normal after partial or total network interruption such as power loss or transient upset.
 - 3. System shall automatically trigger event providing communication failures to the operator and identify the communication link that has experienced a partial or total failure.
 - i. Trigger events will be named using the following event terms
 - 1. Panel Online
 - 2. Panel Offline
 - 3. Reader Comm Fail
 - 4. Panel Tamper Alarm
 - 5. Panel AC Power Fail Alarm
 - 6. Panel Alarm External Battery Low
 - 7. Door Held
 - 8. Door Forced
 - 4. Communications Controller may be used as an interface between the Central Station display systems and the field device network. Communications Controller shall provide functions required to attain the specified network communications performance.

- C. Field equipment shall include Controllers, sensors, automatic door operators, audible alarms, door contact, request to exit and controls. Controllers shall serve as an interface between the application software and sensors and controls. Data exchange between the Central Station and the Controllers shall include down-line transmission of commands, software, and databases to Controllers. The up-line data exchange from the Controller to the Central Station shall include status data such as intrusion alarms, status reports, and entry-control records.

- D. Data Line Supervision: System shall initiate an alarm in response to opening, closing, shorting, or grounding of data transmission lines.

E. Software Configuration

1. All devices shall be configured in the access control system with names as agreed upon with owner.
2. All access control panels shall be clustered separately in Ccure 9000 as their own master panel.
3. Naming general consists of Building Name | Floor | Block Plan Description | Device Type | Door Number.
 - i. Devices can consist of the following:
 1. DSM
 2. REX
 3. AUDIBLE
 4. LOCK
 5. Reader
 6. CR
 7. AP
 8. ADA Prox
 9. Door Operator

F. Inputs

1. The ACS shall monitor both supervised and unsupervised hardware inputs as well as virtual inputs such as predefined system messages. These inputs include door / elevator inputs and monitor points. The ACS shall also monitor controller inputs such as tamper, AC fail and low battery.
2. The ACS shall be configured to link the state of an input to an output with events. The system shall allow multiple inputs to activate a single output or group of outputs.
 - i. For example, FORCED and HELD door events shall activate audible events.

G. Outputs

1. The ACS shall have outputs that associate an input or event action with a relay. These output uses include doors / elevators, locks, and audible alarms.
2. There shall be two types of outputs available: dry contact / Form C relays and Open Collectors. Outputs shall be configured such that they can be activated, deactivated or pulsed by system actions.

H. Door Configurations

1. The ACS shall allow doors to be configured to operate in any of the following access control modes:
 - a. Unlocked
 - b. No Access (Secure mode)
 - c. Locked
2. Each door shall be configured to cause a variety of events such as alarms to occur based on activity at that door.

PART 3 - PRODUCTS

3.1 APPLICATION

- A. All hardware be compatible with the ACS, which is Software House 9000 version 2.6.
- B. Security Contractor shall expand the existing Ccure 9000 environment with the appropriate sized iStar panels to support all devices as specified in the security drawings.

3.2 EQUIPMENT LIST

- A. The following equipment list contains a specific equipment that may be required for this project. It is the Contractor's responsibility to provide and install all required equipment to meet the design objectives based on this written specification and drawings.

Unit Material – Access Control System

<u>Item</u>	<u>Code</u>	<u>Location</u>	<u>Description</u>
1)	A	See Dwgs	Audible alarm, with: <ul style="list-style-type: none">a) Approvals include: UL Standard 464, California State Fire Marshal (CSFM), New York City (MEA), Factory Mutual (FM), and Chicago (BFP)b) Field selectable settings for Temporal (Code 3) or Continuous Hornc) Synchronized code 3 horn when used with Wheelock's Sync Moduled) Designed to meet or exceed NFPA/ANSI standardse) Convenient mounting to any standard single-gang boxf) Beauty plugs to cover mounting screwsg) No additional trim plate required for flush mountingh) Fast installation with In/Out screw terminals using #12 to #18 AWGi) High sound output with low current drawj) Continuous or Code 3 Outputk) Mount to single-gang boxes Wheelock MIZ-24S-W BY SECURITY CONTRACTOR NO EXCEPTION
2)	CP	See Dwgs	Access Control Panel, with: <ul style="list-style-type: none">a) Ethernet ready control panelb) Multiple reader technology supportc) Up to Sixteen (16) card reader portsd) Up to Sixteen (16) supervised inputs via secondary panel enclosuree) Up to Eight (8) outputsf) Enclosure equipped with Tamper switch wired ing) Wall mountedh) Use of RM4E boards will be at the approval of the Consultant and/or owner and should not be used without approval.

Software House iStar Ultra SE 128MB
BY SECURITY CONTRACTOR
NO EXCEPTION

- 3) CPS See Dwgs Controller Power supply, with:
- a) 12 VDC operation
 - b) Size as required to operate all 12 VDC rated devices for 4 doors
 - c) Battery backup for eight (8) hour operation during loss of AC power (minimum)
 - d) Sealed lead acid batteries
 - e) Provide batteries in a separate junction box
 - f) Steel enclosure w/ lock, elec. knockouts
 - g) Wall-mount (on security backboard)
 - h) Provide tamper switch for enclosure door
 - i) UL listed
 - j) Tamper switch and battery state wired into CP
 - k) For use with:
 - a) Control panel, access control system - 2A min.
 - b) Card reader - 65 mA to 96mA
 - c) Infrared request-to-exit devices - 13 mA each
 - d) Motion detection devices - 16 mA each
 - e) Local audible alarm (for emergency egress) – 15mA
 - f) Other devices rated for 12VDC power
- BY SECURITY CONTRACTOR
- 4) CR See Dwgs Magnetic stripe card reader with:
- a) Ability to read tracks 1 and 2
 - b) Ability to read HID Prox
 - c) LED to indicate successful read (active) and programmed with Penn State HFS LED specifications by HID
 - d) Terminal stripe wire connection
 - e) Surface mounted, Compatible with metal and non-metal mounting surfaces
Exterior mounted, vandal and weather resistant
- HID RMP40 multiCLASS magnetic strip reader 6225C
(model 922PTNTEK00424)
BY SECURITY CONTRACTOR
NO EXCEPTIONS
- 5) CR-P See Dwgs Card reader with:
- a) Ability to read HID Prox
 - b) LED to indicate successful read (active)
 - c) Terminal stripe wire connection
 - d) Surface mounted, Compatible with metal and non-metal mounting surfaces
Exterior mounted, vandal and weather resistant
 - e) **ADA required (CR-P) RP40 (without magnetic strip reader)**
- HID RP40 multiCLASS magnetic strip reader 6225C

(model 922PTNTEK00424)

BY SECURITY CONTRACTOR

NO EXCEPTIONS

- 6) DSM See Dwgs Concealed magnetic contacts, with:
- a) Hole drilled by Main Contractor if new door. Hole drilled by Security Contractor if existing door.
 - b) For door status monitoring
 - c) Coordinate color, as necessary
 - d) Note: installation of magnetic contact is not necessary if electromagnetic lock employs integral door status device.
- GE Model 1078 or Approved Equal
BY SECURITY CONTRACTOR
- 7) DC2 See Dwgs Surface door magnetic contacts, with:
- a) Three independent Form C biased reed contacts
 - b) High secure surface mount
 - c) Armoured cable
 - d) Double pull double throw
 - e) Connect to both access control and intrusion systems
- BY SECURITY CONTRACTOR
- 8) EL See Dwgs Electric lock, with:
- a) Supplied and installed by the Main Contractor
 - b) All doors with electric locks to receive fail-safe electric locks
 - c) 24 VDC operation
 - d) To be used in conjunction with institutional type lockset
 - e) Integrated request to exit
- BY GENERAL CONTRACTOR
- 9) ER See Dwgs Emergency Pull Down Station, with:
- a) Pull down override switch to interrupt power for emergency access
 - b) Pressure sensor Mylar tabs with raised text
 - c) SPDT relay contacts
 - d) Tie-in emergency pull to access control system
- Dortronics Systems 6510/BL or Approved Equal
BY SECURITY CONTRACTOR
- 10) ES See Dwgs Electric Strike, with:
- a) Supplied and installed by the Main Contractor
 - b) Stainless steel construction
 - c) Tamper resistant
 - d) Endurance 1,000,000 cycles
 - e) Fail secure (standard)
 - f) Dual voltage 12 or 24VDC continuous duty
 - g) Internally mounted solenoid
 - h) Full keeper shims for horizontal adjustment

- i) Trim enhance
- j) Dual Switch Monitoring for latch bolt status and strike condition.

Option: DSLC (Latch bolt Status Switch)
 HESS 9400 (narrow style) or 9600 depending on design application
 BY SECURITY CONTRACTOR
NO EXCEPTIONS

11) H See Dwgs

Electric Transfer Hinge, with:

- a) Supplied and installed by the Main Contractor
- b) All doors with electric locks to receive fail-safe electric locks
- c) 24 VDC operation
- d) To be used in conjunction with institutional type lockset Securitron(Part # CEPT-10)

BY SECURITY CONTRACTOR
NO EXCEPTIONS

12) REX See Dwgs

Request-to-Exit switch, with:

- a) Switch to be contained in crash bar or strike
- c) 12 or 24 VDC fail-safe operation.
- h) Coordinate color and aesthetics requirements with the architect

Sargent 80 Series w/855 option(Request to Exit)
 Part number: 558804F862RHR32D
 OR
 Von Duprin 98/99 Series w/RX option
 Part number: RX99NL-OP3US26DRHR
 *NO CYLINDER OR ALLEN WRENCH DOGGING
 BY SECURITY CONTRACTOR
NO EXCEPTIONS

13) IR See Dwgs

Request-to-Exit Sensor, with:

- a) 2.5M by 3M coverage
- b) Adjustable pattern angle
- c) 12 or 24 VDC fail-safe operation.
- d) Mounted on ceiling above access control door
- e) White (verify color with Architect)
- f) Provide a 1N4004 diode or bridge rectifier across inductive load to suppress current spikes caused by the inductive load (refer to manufacturer's installation instructions).
- g) 30 VDC, 1 Amp rated relays
- h) Coordinate color and aesthetics requirements with the architect
- i) Use of IR request-to-exit sensors will be at the approval of the Consultant and/or owner and should not be used without approval.
- j) If an IR request-to exit sensors are approved, external audible alarm is required and alarm function within IR is not approved in place of external audible alarm.

Bosch Model 160i or Approved Equal

BY SECURITY CONTRACTOR

- 14) LPS See Dwgs Lock Power supply with:
- a) 12-24 VDC operation
 - b) Size as required to operate all 12 VDC rated devices and 24 VAC devices
 - c) Sealed lead acid batteries
 - d) Battery backup for four (4) hour operation during loss of AC power (minimum)
 - e) Provide batteries in a separate junction box
 - f) Steel enclosure w/ lock, elec. knockouts
 - g) Wall-mount (in existing location as CP)
 - h) Provide tamper switch for enclosure door
 - i) UL listed
 - j) Tamper switch
 - k) For use with:
 - Control panel, access control system - 2A min.
 - Local audible alarm (for emergency egress) – 15mA
 - Existing locking both electric strike and mortis locking
Altronix or approved equal

BY SECURITY CONTRACTOR

- 15) PB Pushbutton ADA with:
- a) Features: Smooth rounded corners, high quality images and text, tamper resistant by reason of no visible mounting screws
 - b) Size: 4.5" X 4.5" (114mm x 114mm) square cover plate
 - c) Logo: Debossed or engraved with Blue infill
 - d) Material & Finish: Type 304 Stainless Steel in brushed finish (US32D)
 - e) Mounting Plate: 4.5" X 4.5" Aluminum, 1/8" thick
 - f) Switch mechanism: UL & CSA tested momentary SPDT snap action switch rated at 15 Amp 125/250 VAC
 - g) Single Pole Double Throw (S.P.D.T.) momentary switch has 3/4" (19mm) mounting depth
 - h) Quality Snap-Action devices require minimal actuation force, within A.D.A. requirements
 - i) Compatible with single gang and 2 gang boxes (4" round mount to single gang only)
 - j) All 4-1/2" square switches can be mounted on square bollards
 - k) Projection from mounting surface: Approximately 5/8" (15.8mm)

BY SECURITY CONTRACTOR

- 16) CA Plenum-rated multi-conductor communication cable, with:
- a) For communication between control panel (CP) and card reader (CR).
 - b) ISO listed, NicEic type CMP, PVC-rated
 - c) 6-conductor, shielded (19 x 30) 22 AWG.
 - d) 55 pF/ft. nominal capacitance between conductors.

- e) 99 pF/ft. nominal capacitance between one conductor and other conductors connected to shield.
 - f) Nominal outside diameter: 4.5 mm.
 - g) Provide 5 meters minimum slack at junction box adjacent to control panels (CP).
 - h) Provide 5 meters minimum slack coiled within cable pull box (JB) adjacent to card reader location. However, additional cable slack may be required if the cable pull box is not located reasonably close to the corresponding door. In this scenario, as a rule, provide cable slack length equal to the distance from the cable pull box to the corresponding door, plus 3 meters.
 - i) Use of RM4E boards will be at the approval of the Consultant and/or owner and should not be used without approval.
- BY SECURITY CONTRACTOR

17) CW

Plenum -rated multi-conductor power cable, with:

- a) For 12VDC and 24VDC power applications (CP, ML, EL, ES).
- b) ISO listed, NicEic type CMP, PVC rated.
- c) Overall shield, 1-pair cable, stranded conductors (7x26) 18 AWG
- d) Nominal outside diameter: 7.3 mm.
- e) Provide 5 meters minimum slack at junction box adjacent to control panels (CP).
- f) Provide 5 meters minimum slack coiled within cable pull box (JB) adjacent to card reader location. However, additional cable slack may be required if the cable pull box is not located reasonably close to the corresponding door. In this scenario, as a rule, provide cable slack length equal to the distance from the cable pull box to the corresponding door, plus 3 meters.

BY SECURITY CONTRACTOR

18) CA

Plenum -rated multi-conductor communication cable, with:

- a) For communication (status) between control panel (CP), and security-related components at door (DC, EL, DR, and A, IR).
- b) For communication between network devices
- c) ISO listed, NicEic type CMP
- d) 2-conductor stranded (16 x30) 18 AWG.
- e) Overall shield
- f) Nominal outside diameter: 4.8 inches.
- g) Provide 5 meters minimum slack at junction box adjacent to control panels (CP).
- h) All cables must be run in conduit.

BY SECURITY CONTRACTOR

19) CA

Miscellaneous equipment and hardware, including:

- a) Interconnect cabling
- b) Plates, terminal blocks, raceway, and other cable management hardware
- c) Crimp connectors, relays etc.

- d) Enclosures, junction boxes for additional equipment (batteries, etc), if necessary.
 - e) Automatic Door Operator Manufacturer is specified as Norton – Assa Abloy or LCN – Allegion and to follow all specifications sited in PSU Office of Physical Plant submittals.
 - f) To ensure a complete and operational access control system.
- BY SECURITY CONTRACTOR

PART 4 - EXECUTION

4.1 EXAMINATION

- A. Examine pathway elements intended for cables. Check raceways, cable trays, and other elements for compliance with space allocations, installation tolerances, hazards to cable installation, and other conditions affecting installation.
- B. Examine roughing-in for LAN and control cable conduit systems to PCs, Controllers, card readers, and other cable-connected devices to verify actual locations of conduit and back boxes before device installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

4.2 PREPARATION

- A. Data cabling or camera, intercom and all “IP” enabled devices shall comply with EIA/TIA-606, "Administration Standard for the Telecommunications Infrastructure of Commercial Buildings."
- B. Obtain from Consultant and/or Owner, door naming conventions.
- C. Obtain detailed Project planning forms from manufacturer of access-control system; develop custom forms to suit Project. Fill in all data available from Project plans and specifications and publish as Project planning documents for review and approval.
 - 1. Record setup data for control station and workstations.
 - 2. For each Location, record setup of Controller features and access requirements.
 - 3. Propose start and stop times for time zones and holidays, and match up access levels for doors.
 - 4. Set up groups, facility codes, linking, and list inputs and outputs for each Controller.
 - 5. Assign action message names and compose messages.
 - 6. Set up alarms. Establish interlocks between alarms, intruder detection, and video surveillance features.
 - 7. Prepare and install alarm graphic maps.
 - 8. Develop user-defined fields.
 - 9. Develop screen layout formats.

10. Propose setups for guard tours and key control.
11. Discuss badge layout options; design badges.
12. Complete system diagnostics and operation verification.
13. Prepare a specific plan for system testing, startup, and demonstration.
14. Develop acceptance test concept and, on approval, develop specifics of the test.
15. Develop cable and asset management system details; input data from construction documents. Include system schematics and Visio Technical Drawings.

D. In meetings with D-B team and Owner, present Project planning documents and review, adjust, and prepare final setup documents. Use final documents to set up system software.

4.3 CABLING

A. Comply with NECA 1, "Good Workmanship in Electrical Contracting."

B. Install cables and wiring according to requirements in Division 28 Section "Conductors and Cables for Electronic Safety and Security."

C. Wiring Method: Install wiring in raceway and cable tray except within consoles, cabinets, desks, and counters. Conceal raceway and wiring except in unfinished spaces.

D. Wiring Method: Install wiring in raceway and cable tray except within consoles, cabinets, desks, and counters and except in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Use NRTL-listed plenum cable in environmental air spaces, including plenum ceilings. Conceal raceway and cables except in unfinished spaces.

E. Install cables without damaging conductors, shield, or jacket.

F. Boxes and enclosures containing security system components or cabling, and which are easily accessible to employees or to the public, shall be provided with a lock. Boxes above ceiling level in occupied areas of the building shall not be considered to be accessible. Junction boxes and small device enclosures below ceiling level and easily accessible to employees or the public shall be covered with a suitable cover plate and secured with tamperproof screws.

G. Install end-of-line resistors at the field device location and not at the Controller or panel location.

4.4 CABLE APPLICATION

A. Comply with EIA/TIA-569, "Commercial Building Standard for Telecommunications Pathways and Spaces."

B. Install LAN cables using techniques, practices, and methods that are consistent with Category 6 rating of components and that ensure Category 6 performance of completed and linked signal paths, end to end.

- C. Cable application requirements are minimum requirements and shall be exceeded if recommended or required by manufacturer of system hardware.
- D. RS-232 Cabling: Install at a maximum distance of 50 feet (15 m).
- E. RS-485 Cabling: Install at a maximum distance of 4000 feet (1220 m).
- F. Card Readers and Keypads:
 1. Install number of conductor pairs recommended by manufacturer for the functions specified.
 2. Unless manufacturer recommends larger conductors, install No. 22 AWG wire if maximum distance from Controller to the reader is 250 feet (75 m), and install No. 20 AWG wire if maximum distance is 500 feet (150 m).
 3. For greater distances, install "extender" or "repeater" modules recommended by manufacturer of the Controller.
 4. Install minimum No. 18 AWG shielded cable to readers and keypads that draw 50 mA or more.
- G. Install minimum No. 16 AWG cable from Controller to electrically powered locks. Do not exceed 250 feet (75 m)

4.5 GROUNDING

- A. Comply with Division 26 Section "Grounding and Bonding for Electrical Systems."
- B. Comply with IEEE 1100, "Power and Grounding Sensitive Electronic Equipment."
- C. Ground cable shields, drain conductors, and equipment to eliminate shock hazard and to minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.
- D. Bond shields and drain conductors to ground at only one point in each circuit.
- E. Signal Ground:
 1. Terminal: Locate in each equipment room and wiring closet; isolate from power system and equipment grounding.
 2. Bus: Mount on wall of main equipment room with standoff insulators.
 3. Backbone Cable: Extend from signal ground bus to signal ground terminal in each equipment room and wiring closet.

4.6 IDENTIFICATION

- A. In addition to requirements in this Article, comply with applicable requirements in Division 16 Section "Electrical Identification" and with TIA/EIA-606.
- B. Label each terminal strip and screw terminal in each cabinet, rack, or panel.

1. All wiring conductors connected to terminal strips shall be individually numbered, and each cable or wiring group being extended from a panel or cabinet to a building-mounted device shall be identified with the name and number of the particular device.
2. Each wire connected to building-mounted devices is not required to be numbered at the device if the color of the wire is consistent with the associated wire connected and numbered within the panel or cabinet.

C. System Software (if applicable)

1. Provide to owner panel configuration sheets as programmed in software.

D. Installation

1. Non ADA card readers will be surface mounted and installed 42 inches high from ground on the opening side of the door.
2. ADA required (CR-P) without magnetic strip card reader will be installed at 36 inches high from ground on the right side of door, unless approved otherwise.
3. If ADA entrance, single interior vestibule CR-P reader required if vestibule is over 10 feet. Vestibules under 10 feet do not require an interior vestibule reader.
4. In a vestibule with two doors, door operators to be programmed through card access system so that doors are opened in sequence from outside going in and inside going out.
5. Magnetic strip card reader will be installed on the right side of prox portion of the reader and so that card strip is facing prox portion of reader when swiped.
6. ADA push buttons are ONLY utilized at commons buildings with public access and interior of student rooms that are equipped with automatic door operators.
7. Automatic door openers are to be programmed to allow for an 8 second hold open time from when door swings reaches a 90 degree angle.

E. Field Quality Control

1. Inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field-testing. Report results in writing.
2. Perform the following field tests and inspections and prepare test reports:
 - a. LAN Cable Procedures: Inspect for physical damage and test each conductor signal path for continuity and shorts. Use Class 2, bi-directional, Category 6 tester. Test for faulty connectors, splices, and terminations. Test according to TIA/EIA-568-1, "Commercial Building Telecommunications Cabling Standards - Part 1 General Requirements." Link performance for UTP cables must comply with minimum criteria in TIA/EIA-568-B.
 - b. Test each circuit and component of each system. Tests shall include, but are not limited to, measurements of power supply output under maximum load, signal loop resistance, and leakage to ground where applicable. System components with battery backup shall be operated on battery power for a period of not less than 10 percent of the calculated battery operating time. Provide special equipment and software if testing requires special or dedicated equipment.

- c. Operational Test: After installation of cables and connectors, demonstrate product capability and compliance with requirements. Test each signal path for end-to-end performance from each end of all pairs installed. Remove temporary connections when tests have been satisfactorily completed.
 - d. Set and name all preset positions; consult Owner's personnel.
 - e. Set sensitivity of motion detection.
 - f. Connect and verify responses to alarms.
 - g. Verify operation of control-station equipment.
3. Remove and replace malfunctioning devices and circuits and retest as specified above.
 4. Test Schedule: Schedule tests after pre-testing has been successfully completed and system has been in normal functional operation for at least 14 days. Provide a minimum of 10 days' notice of test schedule.
 5. Operational Tests: Perform operational system tests to verify that system complies with Specifications. Include all modes of system operation. Test equipment for proper operation in all functional modes.
 6. Remove and replace malfunctioning items and retest as specified above.
 7. Record test results for each piece of equipment.
 8. Retest: Correct deficiencies identified by tests and observations and retest until specified requirements are met.

4.7 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions and to optimize performance of the installed equipment. Tasks shall include, but are not limited to, the following:
 1. Check cable connections.
 2. Adjust all preset positions; consult Owner's personnel.
 3. Provide a written report of adjustments and recommendations.