PART 1 - GENERAL

1.01 SCOPE

A. Refer to Section 27 00 00 for additional project scope information.

B. This specification section covers the furnishing and installation of a new and complete enterprise-wide, low-voltage, Electronic Access Control System (EACS).

C. Contractor shall furnish and install access control hardware devices, mounting brackets, power supplies, switches, controls, consoles and other components of the system as shown and specified.

D. Contractor shall furnish and install access control related software to allow this system expansion. Software includes required license addition for access control readers and electrified portals, workstations and required physical security system integration.

E. Furnish and install outlets, junction boxes, conduit, connectors, wiring, and other accessories necessary to complete the system installation. Requirements shall be in accordance with Division 26 00 00, Electrical.

1.02 PRECEDENCE

A. Obtain, read and comply with General Conditions and applicable sub-sections of the contract specifications. Where a discrepancy may exist between any applicable sub-section and directions as contained herein, this section shall govern.

1.03 RELATED WORK

A. Division 08 - Door Hardware

B. Division 14 - General Elevator Requirements

C. Section 27 00 00 – Common Work Results for Technology

D. Section 27 11 00 – Communications Equipment Rooms

E. Section 27 13 00 – Communications Backbone Cabling

F. Section 27 15 00 – Communications Horizontal Cabling

G. Section 27 16 00 – Communications Connecting Cords

H. Section 27 18 00 – Communications Labeling and Identification

I. Section 27 60 00 – Common Work Results for Security Systems

J. Section 27 66 00 – Video Surveillance System

1.04 DEFINITIONS

A. Refer to Section 27 00 00 for additional definitions.
PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

A. Unless noted otherwise, products in this section are intended as a basis of design and are open to substitutions per the product substitution procedures defined in Section 27 00 00.

2.02 ELECTRONIC ACCESS CONTROL HARDWARE

1. Provide compatibility with Owner campus-wide access control system.

2. Manufacturer: Genetec
   a. MDF/IDF rooms to include, but not limited to, Synergis appliances; mercury hardware: reader interface, monitor interface; and UPS power supplies as needed.
   b. Coordinate card readers with door hardware schedule, providing all wiring, parts, and power supplies to provide a complete solution for each indicated door.

3. Card Reader shall be HID #920PMNEKMA003

2.03 CABLES

A. Provide cabling per manufacturer’s recommendations and code requirements for riser rated, plenum, and non-plenum cable types.

B. UTP data cabling required will be provided, installed, terminated and tested by the Division 27 structured cabling Contractor.

C. UTP patch cables will be provided and installed by the Owner in the IDF and provided by Owner and installed by Contractor at the door. The EACS Contractor shall provide the Owner a list of patch cable lengths at the door side.

D. Cables for electronic access controlled doors shall be bundled and include the followings conductor counts:
   2. Lock power – 4 conductor, 18 awg unshielded.
   3. Door contact – 2 conductor, 22 awg unshielded.
   4. Request to exit and/or latch detection/spare – 4 conductor, 22 awg unshielded

E. Manufacturer:
   1. Belden #658AFS
   2. Convergent #725116
   3. General Cable #4EPL1S
   4. Or approved equal

F. Cables for biometric access controlled doors shall include a 6 conductor, 22 awg shielded cable in addition to the bundled cable. A separate UTP data cable and jack shall be installed to each biometric reader by the division 27 cabling Contractor.
2.04 DOOR CONTACTS/DOOR POSITION SWITCHES
A. Sealed and potted magnetic reed switch in contact housing
B. Provide DPDT for applications with multiple security systems (Access Control/Intrusion Detection or PLC) utilizing a single door contact.
C. Provide color that matches door as close as possible.
D. Provide recessed switch whenever possible.
E. Armored whip for surface mount contacts.
F. Provide GE Interlogix 1078 Series for recessed applications.
   1. Or approved equal.
G. Provide GE Interlogix 2500 Series for surface mount applications.
   1. Or approved equal.
H. Provide GE Interlogix 2200 Series for overhead door applications.
   1. Or approved equal.

2.05 ELECTRONIC ACCESS CONTROL SERVER
A. Provide/Coordinate installation into existing SCSU system server.

PART 3 - EXECUTION

3.01 TESTING
A. Refer to Section 27 00 00 for additional requirements.
B. Prior to energizing or testing the system, ensure the following:
   1. All products are installed in a proper and safe manner per the manufacturer's instructions.
   2. Dust, debris, solder, splatter, etc., is removed.
   3. Cable is dressed, routed, and labeled; connections are consistent with regard to polarity.
   4. All products are neat, clean, and unmarred, and parts are securely attached.
C. Contractor shall ensure that each device in the security system is functioning normally and in such a manner as to meet the functional and performance requirements in this specification.

3.02 WARRANTY
A. Refer to Section 27 00 00 for additional requirements.

3.03 INSTALLATION PRACTICES
A. All services provided shall be professional and conform to the highest standards for industry practices. The Owner reserves the right to halt any installation due to poor workmanship. All work shall be defect free, and the installer shall replace, at their expense, any work found to be defective.
B. The Owner reserves the right to halt any installation due to failure of Contractor to observe installation-free periods due to instructional or administrative requirements. To the maximum extent possible, the Owner will provide advance notice of such periods.
C. Contractor is responsible for providing a complete and system.

D. All manufactured items, materials, and equipment shall be applied, installed, connected, erected, used, and adjusted as recommended by the manufacturers, or as indicated in their published literature, unless specifically noted herein to the contrary.

E. Contractor shall follow these standards and approved submittals for locations of power supplies. The Owner intends to limit the number and location of power supplies to facilitate more effective long-term support and maintenance of the system.

3.04 COORDINATION

A. Contractor shall provide up to 16 hours (up to eight, 2-hour sessions) of scheduled and dedicated coordination time to assist Owner with sequence of operation, rule creation, action creation, event creation and coordination as requested by Owner or Architect.

3.05 AESTHETICS

A. All cables and equipment terminating at panels frames shall be vertically straight, with no cables crossing each other, from twelve inches inside the ceiling area to the termination block.

B. All cable bundles shall be combed and bundled to accommodate individual termination block rows and panels.

C. For any given telecom room, a horizontal and vertical alignment for all mounting hardware will be maintained to provide a symmetrical and uniform appearance to the distribution frame.

D. All surface-mounted devices shall be firmly secured level and plumb

E. All rack mount equipment shall be securely installed.

3.06 HARDWARE LAYOUT

A. Hardware positioning and layout shall be reviewed and approved by the Owner prior to construction. The review does not exempt Contractor from meeting any of the requirements stated in this document.

3.07 SERVER INSTALLATION PRACTICES

A. Verify that the manufacturer approved server hardware, OS meets the Owner’s IT standards prior to ordering.

B. Coordinate server power, cooling, and mounting requirements with Owner prior to installation.

C. Coordinate virus scan/security software requirements with Owner and manufacturer prior to installation.

3.08 DEVICE CABLING/WIRING INSTALLATION PRACTICES

A. All external wire and cables shall be supported at least every five feet from the structure or as required to maintain not more than 12” cable sag between supports and without over tensioning the cables. Provide j-hooks as needed where cable tray or raceway is not available.

B. This Contractor shall coordinate installation with Division 27 cabling Contractor to ensure there is at least 2-inches of physical separation between security cabling and voice/data cabling throughout cable path. Voice/data cabling Contractor has first claim to cable tray.

C. All cables, regardless of length, shall be labeled within 18” of both ends with an identifier that is keyed to the door, room, or corridor number as identified.
D. All cables shall have 6-foot service loops neatly coiled in the equipment room. During initial cable rough-in, this Contractor shall have sufficient slack to route anywhere within the equipment room.

E. Cabling shall be adequately supported with Velcro wire wraps and horizontal support cable managers fastened to rack frame. Cables shall be dressed in a neat and orderly fashion. Any cabling or equipment installation that is deemed unacceptable by the Owner or Architect shall be replaced or corrected by the Contractor at no additional cost. Plastic zip ties are not allowed.

F. All cables are to run at right angles to the structure, placed above the ceiling in halls or corridors.

G. Cables shall not run above red iron joist.

H. Contractor shall make every effort to conceal wiring and other apparatus into walls, floors, and ceilings, assuming code and good engineering practice allows and suggests.

I. Ties and straps shall be installed snugly without deforming cable insulation. Ties shall be spaced at uneven intervals not to exceed four feet. No sharp burrs shall remain where excess length of the cable tie has been cut.

J. Contractor shall notify Owner immediately if obstruction or hazard is discovered in a pathway provided by others.

K. Cable shall be stored and handled to assure that it is not stretched, kinked, crushed, or abraded in any way. Bend radiuses shall meet manufacturer specifications and/or recommendations. Cable shall not be installed in ambient temperatures or moisture conditions above or below the manufacturer’s rating.

L. No splices shall be installed in any cable.

3.09 CABLE TERMINATION

A. Termination hardware (blocks and patch panels) positioning and layout shall be reviewed and approved by the Owner prior to construction. The review does not exempt Contractor from meeting any of the requirements stated in this document.

3.10 PHYSICAL SECURITY SYSTEMS AND INTERCOM INTEGRATION

A. The electronic access control system shall be integrated with the video surveillance system and intrusion detection system.

1. The access control/intrusion detection interface shall be via an Ethernet interface. Contact closure integration shall only be utilized if the system is existing and cannot be upgraded to Ethernet. The Contractor shall supply all necessary expansion boards if contact closure integration will be required.

2. The access control/video surveillance integration shall be via a native IP interface.

3. The video surveillance/intrusion detection interface shall be via an Ethernet interface.

B. The Contractor shall provide any and all licensing to integrate the systems together including any additional items to be added to the yearly maintenance agreement.

C. The following minimum features shall be included in the integration; the following list is not all inclusive or exhaustive. The integration shall be a turnkey solution:

1. Call up live and/or recorded video from an alarm or event.

2. Graphical maps showing camera icons.
3. “Mouse over” camera viewing through the application browser and graphical maps.

4. Playback controls for recorded video.

5. Camera names brought in from the VMS.

6. PTZ camera mouse control.

7. Database entries for intrusion arm/disarm events on individual keypads.

8. Database entries for intrusion alarm events.

9. Graphical map symbols for intrusion keypads tied to camera views.

10. Intrusion devices or zones tied to camera views.

11. Alarm pop-ups and events shall include instructions and a sequence of operation to deal with events on the Intrusion Detection System, Video Management System and Electronic Access Control System.

12. Intercom pop-ups when call button is pressed with the ability to unlock the door.

13. Time syncing via common NTP server.

D. The Contractor shall set up a meeting between the Owner, Architect and manufacturer to determine the exact functionality of the integration before the integration starts.

3.11 FIRE STOPPING

A. Fire stopping of openings between floors, fire-rated walls, and smoke-rated walls, created by others for This Contractor to pass cable through, shall be the responsibility of the This Contractor. Sealing material and application of this material shall be accomplished in such a manner that is acceptable to the local fire and building authorities having jurisdiction over this work.

B. Any openings created by or for This Contractor and left unused shall be sealed up by This Contractor.

C. This Contractor shall be responsible for creating a waterproof seal in and around any openings that This Contractor creates from the structure to the outside environment.

3.12 SYSTEM INSPECTION

A. Contractor shall coordinate with project representative for inspection after Contractor has completed testing of entire system.

B. Contractor shall have trained Contractor representative and testing equipment on site during inspection to assist with spot verification of tests.

C. Contractor shall verify with Project Representative the precise positioning of camera aim and shall make fine adjustments as requested.

3.13 LABELING

A. Contractor shall neatly label all security devices and cabling at both ends. All labels shall be on Project as-built drawings.

3.14 DOCUMENTATION

A. Upon completion of the installation, Contractor shall provide full documentation sets to the Architect for approval as described in section 27 60 00. All documentation shall become the property of the Owner.
B. Documentation shall include the additional specific items detailed in the subsections below:

1. Contractor shall provide hard copy and electronic forms of the final test results.
2. Contractor shall provide a document including the following:
   a. Door label/identifier
   b. Location of each drop by orientation/permanent landmark in the room
   c. Contractor shall provide accurate as-built Construction Drawings. The drawings are to include cable routes and device locations.

3.15 PRE-CHECK OUT

A. The Contractor shall demonstrate the following to Owner during system demonstration.

1. The card readers are fully installed and functional.

3.16 FINAL ACCEPTANCE

A. In addition to closeout requirements in section 27 60 00, This Contractor shall demonstrate the following before final approval.

1. Owner training is complete.
2. Punch list items are complete.
3. As-built documentation is complete and submitted to Owner/Architect.

3.17 ANNUAL SUPPORT AGREEMENT

A. An annual support agreement (after the 1st year full of support/warranty) shall not be part of the bid. The Contractor shall work directly with the Owner at the end of the project to determine the ongoing hardware/software support. The Contractor shall send the Architect a copy of the support agreement for review prior to finalization.

3.18 FINAL PROCEDURES

A. Perform final procedures in accordance with section 27 60 00.