



**Business Resource Center & Los Banos
Balance of Doors Project
Bid Documents**

August 18, 2026

Prepared by:



STATEMENT OF SCOPE
BRC & LB BALANCE OF DOORS PROJECT

The following documents define the scope of work for the Merced Community College District's BRC & LB Balance of Doors Project to expand the existing Access Control Systems to include remaining doors at two remote sites. Key dates are included in the Call for Bids.

Section	Title	Date	Rev
<u>Specs</u>			
28 00 01	Security General Requirements	8/03/26	0
28 05 01	Security Wiring and Conduit	8/03/26	0
28 05 11	Cyber Security	8/03/26	0
28 08 11	Security Testing	8/03/26	0
28 10 01	Access Control System Expansion	8/03/26	0
<u>Drawings</u>	MCC_LB_BRC_BOD_100CD_Rev0_Security_Package_20260803.pdf	8/03/26	0
<u>Pricing</u>	MCC250807_010_BRC_LB_BOD_Bid_Response_Workbook.xlsx	8/03/26	0
<u>Programming</u>	MCC250807_011_Lockdown_System_Configuration.pdf	8/18/26	0

Special Instruction(s):

- The Bid Response Workbook has been provided in Excel format. Completion of this Workbook is mandatory and must also be returned in both Excel format as well as a PDF record copy.
- This scope includes special programming, as described in the Lockdown System Configuration Guide. The following are included in this scope:
 - Update Lockdown and All Clear Tasks on existing panels to include doors added in this scope.
 - Create new Lockdown and All Clear Tasks for all new panels within this scope.
 - Create new Lockdown and All Clear Tasks for all existing expansion panels which have not yet been configured.
 - Update Lockdown and All Clear Macros to include Lockdown and All Clear Tasks for each of the new and existing expansion panels which have not yet been configured.

SECTION 28 00 01

SECURITY GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 PROJECT INTENT

- A. The intent of this project is to expand the existing Acre AccessIt! Access Control System to include additional doors at two remote Merced Community College District (MCCD) sites. The Los Banos Campus is located at 22240 Highway 152, Los Banos, CA. The Business Resource Center is located at 630 W 19th Street, Merced, CA.
- B. The primary components of this security approach include:
 - 1. Retrofitting existing doors with electrified locks, door contacts and card readers to be tied into the existing ACS system.
 - 2. Adding Mercury boards to existing panels to accommodate new doors, and in some cases installing new complete ACS panels.

1.02 TERMINOLOGY

- A. This project's Owner is referred to in this document as Owner, and the respondent is referred to as Bidder or Contractor. The term Owner also includes direct employees, affiliates owning the respective sites where the work is to be performed, and other Owner-appointed agents such as architects or consultants. These agents may be requested by Owner to represent Owner in undertaking certain project tasks.
 - 1. The Security Consultant is also referred to as the System Designer. The security design for this project was done by:

Security By Design, Inc. (SBD)
5528 Pacheco Blvd., Suite B-100
Pacheco, CA 94553
(925) 609-1000

1.03 PRECEDENCE

- A. If any statement in this or any other Specification is in conflict with any provision of the General Terms and Conditions to the contract, the provision stated in the General Terms and Conditions shall take precedence. Immediately bring to Owner's attention any questions that result from such potential conflict which require additional interpretation and guidance.
- B. If any dimensions or locations are found to be in conflict between security drawings and any other drawings, immediately bring to Owner's attention any questions that result from such potential conflict so that Owner can provide guidance on precedence.

1.04 BASIC DEFINITIONS

- A. Business days, weekdays or working days:
 - 1. In these specifications, mean 7:00 a.m. to 6:00 p.m., Monday through Friday (in local time zone) at Owner's site.
- B. Design Package

1. The security Design Package consists of all drawings, details, specifications and any necessary additional documents provided as the set of bid documents. Any documents issued to capture design changes including, but not limited to Bulletins, Addendums, and ASKs also become part of the Design Package.
- C. Specified Items – Substitutions
 1. No Substitutes: Provide without exception the exact make and model number identified in this Design Package.
 2. Or Equal: An item may be substituted for the specified item provided that in every technical sense, the substituted item provides the same or better capability.
 3. Or Approved Equal: A substitute item for the specified item may be offered for approval by Owner. The proposed substitute item shall in every technical sense provide the same or better capability than the specified item. Submit such requests for approval in accordance with the provisions of PART 1 - BID RESPONSE - Prior Approvals, within the time frames outlined.
- D. Beneficial Use
 1. Each component of a system will be considered available for beneficial use when all components are installed and conditions are met to make the system fully operational.
 2. Beneficial use by the Owner does not mean the warranty period has started. The warranty period only begins once the systems integrator has completed all of the contractual obligations for the contract. Reference PART 1 - GENERAL - WARRANTY.
- E. Award of Contract
 1. In these specifications, award of contract means both - Owner choosing Contractor as the successful bidder, and the parties executing a contract for the work. In all cases, it is a condition of an award of contract that Contractor agrees to use the form of contract supplied by Owner.

1.05 CODES AND STANDARDS

- A. Perform the work in accordance with current editions of the following codes, rules and regulations:
 1. Appropriate state and local governmental codes
 2. National Electrical Code (NEC)
 3. International Building Code (IBC)
 4. National Fire Protection Association (NFPA), National Fire Code
 5. National Fire Protection Association (NFPA), Life Safety Code
 6. National Electrical Contractor's Association (NECA), National Electrical Installation Standards
 7. Federal Communications Commission (FCC), Communications Act of 1934
 8. Code of Federal Regulations, title 47, Telecommunication
 9. Underwriters Laboratories, Inc. (UL)

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications

1. Furnish only system components by manufacturers of established reputation and experience who have produced similar equipment and who are able to refer to similar installations rendering satisfactory service.

B. Contractor Qualifications

At the time of bid, provide evidence of:

1. Having manufactured, supplied or installed at least 3 other systems of similar size, complexity, and general operation as the systems described in these specifications. Furnish written proof of compliance with this paragraph at time of bid.
2. Holding all legally required licenses necessary to accomplish the installation and activation of the described system at the facilities indicated. Submit copies of licenses.
3. Holding all legally required registrations.
4. Having a local office within 100 miles of the project site, staffed with factory-trained technicians with experience on systems of similar complexity and function as described in these specifications.
 - a. The factory-trained technicians shall be fully capable of system engineering support, installation supervision, programming, system start-up, and providing Owner with training and service on both hardware and software for the systems specified.
 - b. Submit copies of the factory-training certifications.

1.07 BID RESPONSE

A. Bidders' Responsibility

1. Review the Design Package (mandatory).
2. Verify actual conditions by walking the site (mandatory).
3. Advise Owner in writing of any conditions that may adversely affect the work.
4. The drawings are accurate in terms of work scope and design for the function sought by Owner, but may have discrepancies in their depiction of the actual physical construction as of the date of production. Notify Owner if discrepancies are found.
5. Provide a bid response that meets the intent of the Design Package to the satisfaction of Owner.

B. Unit Price Bid Response Workbook

1. Provide installed unit prices for each major component of the security systems and each lettered detail shown on the Design Package. The unit prices shall be the basis for the costing of changes to the security systems.

C. Prior Approvals

1. Submit the following for any substitution proposed by Bidder for equipment items and material (identified by catalog numbers and specified brands or trade names) that are designated as "or approved equal".
 - a. A list describing each proposed substitute item or material no later than 10 working days prior to bid closing date.
 - b. Provide sufficient data, drawings, samples, literature or other detailed information to demonstrate that the proposed substitute is equal in quality, appearance and functionality.
 - c. Submit a statement listing every technical and operational variance from the specified item. If the bidder fails to list a particular variance that is subsequently deemed to be unsatisfactory, such equipment shall be replaced or modified without cost to Owner.
 - d. Owner will respond in writing to substitution requests at least 5 working days prior to the bid closing date. An addendum will be issued listing products which are approved for substitution, and will be the sole source for such approval.
 - e. Such approval shall not relieve Contractor from complying with the requirements of the Design Package.
 - f. Contractor shall be responsible, at Contractor's sole expense, for any detrimental consequences resulting from Owner-approved Bidder-proposed substitutions, including, but not limited to, their impact upon Contractor's work or the work of others.

1.08 SUBMITTALS

- A. Requirements - At Bid Submission
 1. Submit the following:
 - a. List of manufacturers, model numbers, and technical information for all equipment included in the scope of work.
 - b. Letter from the manufacturer of each major system stating that Bidder is a factory-authorized distributor or installer of the proposed system.
 2. Submit unit prices using the Unit Price Bid Response Workbook described in PART 1 - GENERAL - BID RESPONSE - Unit Price Bid Response Workbook.
- B. Requirements - After Award of Contract
 1. No later than 15 working days after the effective date of the Agreement (for construction and/or services) submit for approval the following:
 - a. Plan of Operations and Project Schedule:
 - 1) Submit for approval a complete plan and schedule of proposed operations.

- 2) Account for the schedules of all subcontractors, transportation, storage, and all other matters affecting the work.
 - 3) Revise and provide this schedule weekly, unless there are no changes, to the Project Team.
 - b. Point-to-Point Detail Drawings and Equipment Schedules
 - 1) System Designer will furnish point-to-point detail drawings and equipment schedules to Contractor.
 - 2) Submit for approval any proposed revisions to the point-to-point detail drawings or equipment schedules with clear, legible, specific markings on the affected detail drawings or schedules.
 - 3) Submit only those drawings that have proposed revisions.
2. Submit for approval each of the following no later than 20 working days after the effective date of the Agreement (for construction and/or services):
 - a. Test Procedures
 - 1) Submit for approval any additional test procedures to be followed in evaluating the installed system(s) as covered in SECTION 28 08 11 - SECURITY TESTING.
 - 2) Include all tests required by the equipment manufacturers.

1.09 CHANGES

- A. Prior to proceeding with changes or claims for extras for work that is out of scope,
 1. Provide written notice to Owner.
 2. Obtain written approval from Owner.
 3. Substantiate the actual cost of each change or claim.
- B. The cost of each change shall be based upon the item cost as shown in PART 1 - GENERAL - BID RESPONSE - Unit Price Bid Response Form.

1.10 SUPERVISION OF WORK

- A. Supervise the work from beginning to completion and, within reason, keep the same workers and lead technician on site throughout the duration of the project.
- B. Site Project Manager
 1. Provide a site project manager to interface with all appropriate subcontractors during the installation of the system.
 2. Maintain continuing coordination with Owner regarding progress and any problems that may develop.
- C. Do not begin the work before receiving Owner approval of the complete plan and schedule of proposed operations submitted in accordance with PART 1 - GENERAL - SUBMITTALS.

1.11 PROJECT MEETINGS

- A. Pre-Construction Meeting
 - 1. Attend a pre-construction meeting to be scheduled prior to the start of construction.
 - 2. Owner will identify a representative at this time and will discuss specific work rules with Contractor.
 - 3. Discuss the various aspects of the work and procedures for smooth job progress.
- B. Progress Meetings
 - 1. Hold periodic job site meetings to review progress of the work and resolve installation problems. Invite representatives of Owner and System Designer.
 - 2. At the initial meeting, review all required permits.
 - 3. During the initial meeting, establish the frequency of future meetings to Owner's satisfaction. Meetings should not exceed one per week, except by mutual agreement.
 - 4. Prepare in advance of the progress meetings to get fully informed of status and schedules from on-site personnel and subcontractors in order to accurately provide on-time updates.
 - 5. Provide current version of Project Progress Spreadsheet (in accordance with PART 3 - EXECUTION - COORDINATION WITH OWNER) to all attendees.

1.12 EXAMINATION OF SITE AND VERIFICATION OF EXISTING CONDITIONS

- A. Visit the site and become familiar with all existing conditions prior to submitting bid.
- B. Verify all required dimensions, including those shown on the drawings, by measurement at the job site. Notify Owner of all exceptions before proceeding with the work.
- C. Verify the location of a suitable power source for each piece of specified equipment to be installed.

1.13 DATA ACCURACY

- A. Absolute accuracy of information regarding existing conditions is not guaranteed. The drawings and specifications are for the assistance and guidance of Contractor.
- B. Exact locations, distances, elevations, etc., will be determined by actual field conditions.
- C. Obtain prior approval where variations from the bid documents are required.
- D. Contractor is required to notify Owner of any discrepancies discovered at any stage during the project. Nothing shall excuse Contractor from satisfactorily completing the work in the manner customarily expected from a professional contractor.

1.14 PARKING

- A. Coordinate with Owner for approved parking location(s).
- B. Make special arrangements with Owner if delivery to specific outside doorways or loading docks is required.

1.15 SECURITY

- A. Comply with all Owner and facility security requirements.
 - 1. If any deviation from Owner security requirements is necessary, obtain approval for such deviation from Owner.
 - 2. Comply with the policies and provisions of Owner regarding outside contractors and consultants.
- B. Do not disclose any confidential information of Owner.

1.16 UTILITIES

- A. Owner will supply utilities at the closest practical location for Contractor use.
- B. Provide all temporary connections and cords, lighting, light stands and other equipment, as required.
- C. Use utilities in accordance with applicable state and local government regulations with regard to operations, safety, and fire hazards.

1.17 PERMITS

- A. Secure all permits required for the performance and completion of the work.
- B. Review permit requirements at the initial project progress meeting.

1.18 NORMAL WORKING HOURS

- A. Do not begin work at the facility earlier than 7:00 a.m. and do not work later than 6:00 p.m., Monday through Friday, without prior approval from Owner.

1.19 WORK IMPACTING EXISTING SYSTEMS

- A. Do not shut off any existing systems without first notifying Owner and receiving Owner's express authorization.
- B. Give Owner at least 7 calendar days' notice of any requirement to shut off or interfere with existing alarm, regulating, computer or other service systems.
- C. Owner will arrange and execute any shutdown.
- D. Perform all work necessary to establish or re-establish any system, such as splicing or connecting, in close coordination with Owner.

1.20 INTERFERENCES WITH OWNER

- A. Coordinate with Owner to eliminate or minimize interferences. Conduct transportation, storage of materials, work involving the facility, and all other matters affecting the use by Owner of its buildings, to cause the least possible interferences.

1.21 PROJECT RECORD DRAWINGS

- A. Project Record Drawings include all bid drawings, As-Built drawings, and all submittals.
- B. Owner will furnish plans electronically in PDF version.
- C. Obtain, keep up-to-date, and make available to Owner, redline drawings, details, and schedules of the project clearly annotated with As-Built data as the work is performed. Include the following:

1. Accurate location of all equipment installed under the specifications.
 2. Complete schedule for all IP equipment.
 3. Changes to point-to-point wiring diagrams.
- D. Redline drawings are required to be kept up to date on a regular basis and are required to be current prior to the authorization of each progress payment.
- E. Upon completion of this project, Owner will transfer all information shown on these prints to the final set of As-Built drawings.

1.22 WARRANTY

- A. Provide one full year warranty after Notice of Completion that the equipment and work within this scope is:
1. Free from defects in workmanship and material
 2. Suitable for the intended application
 3. Performing in the manner specified
- B. The warranty shall include on-site service for parts and labor:
1. Normal Service
 - a. Provide normal service at no additional cost to Owner during normal business hours (7:00 AM to 5:00 PM) Monday through Friday within 2 business days for service calls requested by phone before 1:00 PM Monday through Friday, excluding holidays. If normal service is requested after 1:00 PM on a working day or over a weekend or holiday, respond within 3 business days, with the date of request counting as day 1.
 - b. Normal service is defined as repairs, adjustments, parts, replacement of parts, or any service that the system requires to be fully functional that is not an emergency service.
 2. Emergency Service
 - a. Provide emergency service at an additional cost to Owner according to labor rate schedule contractually agreed upon. Emergency service shall respond within a 12-hour period on a 24-hour-per-day, 365-day-per-year basis.
 - b. Emergency service is defined as any repair that Owner deems an emergency and for which it requests emergency service.
 - c. Provide full factory technical support and same day shipping of replacement parts for all equipment.
 - d. Upon award of contract, provide Owner with a cost estimate for emergency service.
 3. Prior to filing the Notice of Completion, system maintenance of work in progress is the sole responsibility of Contractor.

PART 2 - PRODUCTS

2.01 WORK INCLUDED

- A. Provide all the materials listed in PART 2 - PRODUCTS of the individual specification sections and on the detail drawings unless specifically excluded or modified in other portions of the contract document.
- B. These material and equipment lists are not necessarily 100% complete and/or accurate. Verify all quantities and part numbers, whether listed or not.

2.02 MATERIALS

- A. Use the following items to complete equipment, wire and cable installation called for by the other security specification sections and detail drawings. Provide the make and model shown below when the items are needed but not called out in the specifications or the detail package drawings.
 - 1. Terminal Blocks
 - a. Phoenix Model UK5 Universal Terminal Blocks, or approved equal.
 - b. Include Phoenix terminal marking material - ZB, SBS, or approved equal.
 - c. Use Phoenix bridging accessories, end covers, partition plates, and other parts as required, or approved equal.
 - 2. Mounting Rails
 - a. Phoenix Model NS 35/7.5 (perforated), or approved equal
 - 3. Wire Duct, Cable Ties, Cable and Wire Marking, Wire Soldering
 - a. Reference SECTION 28 05 01 - SECURITY WIRING AND CONDUIT, PART 2 - PRODUCTS.
 - 4. Tamper Resistant Screws
 - a. Tamperproof Snake Eyes type fasteners,
https://www.tamperproof.com/products-scs/snake_eyes_spanner or approved equal.
 - b. Provide 2 tamper-resistant screwdrivers and transfer to Owner prior to final acceptance testing.
 - 5. Fire Retardant Treated Plywood
 - a. ¾" Fire Retardant Treated plywood for mounting security panels and other equipment.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

- A. This contract may involve functioning systems.
 - 1. If it does, coordination with Owner is critical.

2. Do not interrupt any functioning system without complying with PART 1 - GENERAL - WORK IMPACTING EXISTING SYSTEMS.
- B. This project has a critical scheduling path which must be closely followed in order to meet the completion date.
 1. Review the proposed schedule at the Pre-Construction Meeting and provide feedback on timelines for key security milestones.
 2. Make reasonable efforts to provide appropriate personnel to meet the schedule constraints presented at that meeting.
- C. Aesthetics is an important consideration in this installation.
 1. Install all components to have aesthetically pleasing results to Owner.
 2. Coordinate actual locations of all visible components in advance with Owner.
- D. Install, make fully operational and test the system as indicated on the drawings and in the specifications.
 1. Where any requested information is not available from Owner for bidding purposes, assume the worst-case condition necessary to ensure complete, functional systems.
- E. Be responsible for interfacing with other systems under this contract.
 1. Show the details (both logical and physical) of such interfaces on the Submittal drawings and PART 1 - GENERAL - PROJECT RECORD DRAWINGS.
- F. Coordinate interfaces with Owner's telecommunications system with Owner.
- G. Where required or when requested by Owner, provide and terminate 120-VAC, 60-Hz power from nearest electrical panel through a junction box, to security system devices.
- H. Install all equipment parallel and square to building lines.
 1. Provide sufficient clearances to meet all applicable codes and to facilitate observation and testing.
 2. Securely hang and/or fasten with appropriate fittings to ensure positive grounding, free of ground loops, throughout the entire system.
- I. Install all equipment to achieve quiet and vibration-free operation.
 1. Adjust, repair, balance, or replace any equipment producing any noise or vibration that is objectionable to Owner.
 2. Provide additional brackets and bracing as necessary.
- J. Comply with PART 1 - GENERAL - CODES AND STANDARDS.
 1. Where more than one code or regulation is applicable, or where specifications and codes disagree, the more stringent shall apply.
 2. Install seismic bracing on equipment where required by local codes.
- K. Where new equipment is replacing existing equipment, remove the existing equipment and perform repair work as necessary to meet Owner standards.
- L. At the completion of work and prior to final testing, install fire stopping at all penetrations in slabs and fire walls to meet codes.

- M. Weather seal all connection points and junction boxes that have exterior exposure or leak potential.
- N. Install Tamper resistant screws for all security equipment (including enclosures and conduit bodies) in accessible locations.
- O. Install Fire Retardant Treated Plywood behind panels and other equipment, as shown on drawings and details. Plywood to be painted with the exception of printed rating labels, which are to be masked off prior to painting so that they remain visible when installed. Confirm paint color with owner.

3.02 WORKMANSHIP

- A. Perform the installation in a professional manner.
- B. Perform all preparation, handling, and installation work in accordance with the manufacturers' written instructions and technical data.
- C. Perform all work in conformance with the National Electrical Contractor's Association "Standard of Installation" for general installation practice.
- D. On a daily basis, clean up all debris from work performed and deposit in appropriate containers.
 - 1. Stack and organize all parts, tools, and equipment when not being used.
- E. At the conclusion of the installation at all work areas, including all panel enclosures, vacuum and clean to remove all debris and grease.

3.03 COORDINATION WITH OWNER

- A. Coordinate closely with Owner to achieve a complete and aesthetically pleasing installation.
 - 1. Keep Owner fully apprised of job progress.
- B. PROJECT PROGRESS SPREADSHEET - Once project progress has commenced, secure from System Designer a copy of the Project Progress Spreadsheet in Excel format. This spreadsheet will include all security points in the project: doors, alarm points, panels, etc. Contractor(s) will enter dates of completion in the pertinent cell to show when the task was completed, allowing coordination between all parties to accurately assess the status of all points and determine who's "Ball-in-court" the next required task falls under.
 - 1. Standard columns to be used in the Project Progress Spreadsheet for effectively tracking progress include:
 - a. Completion date columns: Electrical Prep, Wire Pulled, Door Hardware, Alarm Device, Reader, Local Sounder, Programmed, Operational, Contractor Tested, Owner/Designer Tested.
 - b. Notes - This is the appropriate column to identify issues, explain reason for delay, or clearly communicate work that needs to be completed by others prior to proceeding. All notes should begin with the date, and information such as, "Conduit not installed in door frame" or "Controller backordered until *date*", would be appropriate in this column. This column is not intended to store a cumulative record of the history of

work at each Detail Point. Resolved issues should be deleted and only the current issues or notes should be entered and updated as problems are corrected.

2. Columns may be added or removed by Designer, as needed, to customize this spreadsheet to the scope of the project.
3. The primary purpose of this document is to assist in the distribution of current and accurate data regarding the state of the project. While installation work is in progress, ensure the document is updated and distributed at least weekly prior to the project progress meeting. If the document is housed on a shared platform allowing live updates, it does not need to be sent via email. If not, submit the latest electronic version of the spreadsheet to Owner and System Designer.
4. The spreadsheet will also assist Owner in making timely progress payments based on an accurate assessment of the degree of project completion.

3.04 COORDINATION WITH OTHER TRADES

- A. Coordinate closely with other trades, as necessary, to meet project timeline and goals.

3.05 CUTTING, PAINTING AND PATCHING

- A. Do not drill, bore, or notch any structural member in any manner that impairs its structural value.
 1. If cutting holes in structural members is required, written approval of Owner is required for each instance. Submit a confirming RFI with proposed plan.
- B. Return to their original condition all walls cut or repaired during the installation process.
 1. Match colors and finishes to the satisfaction of Owner.

3.06 START-UP RESPONSIBILITY

- A. Properly ground each piece of electronic equipment prior to applying power.
- B. Properly ground all shielded wire shields to the appropriate earth ground at the panel end only, not at the remote or device end.
- C. Initiate security systems operation.
 1. Provide competent start-up personnel on each consecutive working day until the security systems are functional and ready to start the acceptance test phase.
- D. Where appropriate, bring the security systems on-line in their basic state (i.e., alarm reporting, facility code access control, etc.).
 1. Owner will provide the specific database information that will allow fully integrated security systems operation.
 2. Request the database information from Owner in sufficient time to not delay the project schedule.
- E. Use a start-up sequence that incrementally brings each portion of the system on-line in a logical order that incorporates checking individual elements before proceeding to subsequent elements until the entire system is operational.

- F. If any technical problems occur, and if adequate progress is not being demonstrated resolving the problems within 15 working days, provide manufacturers' factory technical representatives and diagnostic equipment until the problems are resolved.

3.07 PREPARATION FOR ACCEPTANCE (PRIOR TO FINAL INSPECTION)

- A. If, under the scope of Services of this project, Contractor is required to remove and dispose of any existing apparatus or materials, undertake such disposal in accordance with any and all legal requirements.
- B. Label all components in accordance with SECTION 28 05 01 - WIRING AND CONDUIT, SECTION 28 10 01 - ACCESS CONTROL SYSTEM EXPANSION.
- C. Have all systems, equipment, and devices in full and proper adjustment and operation.
- D. Have all equipment and materials in neat, clean and unmarred condition with parts securely attached.
- E. Replace or properly repair all broken work, including glass, raised flooring and supports, ceiling tiles and supports, walls, doors, etc. Clean up and appropriately discard all debris.
- F. Deliver and store all extra materials at the premises as directed.
- G. Complete the test reports of each system and each system component and the As-Built project drawings.
 - 1. Deliver to Owner for review and acceptance.

3.08 SYSTEM ACCEPTANCE REQUIREMENTS

- A. Before final acceptance of work, perform and/or deliver each of the following in the order stated.
 - 1. Testing
 - a. Perform all tests required by the Security Testing Specification SECTION 28 08 11 - SECURITY TESTING and those submitted per the "Test Procedure" section of PART 1 - GENERAL - SUBMITTALS.
 - b. Activate all devices and verify proper operation of the security systems. Include supervisory and trouble circuit tests.
 - c. If activation of a device is impractical (e.g., a discharge test of a fire suppression system), initiate a simulated alarm or trouble by closing or opening the appropriate contact points.
 - d. Do not activate audible alarms except on a one-time, coordinated basis, to check the actual sounding devices. Coordinate closely with Owner.
 - e. Submit a test report for each piece of equipment to Owner. Include a complete listing of all security systems devices, the dates tested, by whom, the results, and dates retested (if failure occurred during any previous tests).
 - f. Successful testing of all security systems devices is required. Failure to completely test and document the tests will delay final testing and acceptance.

2. As-Built Drawings
 - a. After completion of all the tests listed above, and prior to the final acceptance test, Contractor shall submit the complete As-Built drawings as identified in PART 1 - GENERAL - PROJECT RECORD DRAWINGS.
 - b. The final As-Built drawings shall consist of full-size format plans, point-to-point detail drawings, and equipment schedules. Provide final drawings as described in PART 1 - GENERAL - PROJECT RECORD DRAWINGS.
- B. Final Acceptance Test
 1. Before final acceptance testing begins, submit the following to Owner for review and approval:
 - a. Test reports
 - b. As-Built drawings
 2. After the test reports and As-Built drawings are approved by Owner, test the completed security systems in the presence of Owner. Demonstrate performance and compliance with security systems specifications.

3.09 LETTER OF COMPLETION

- A. After the system acceptance requirements described above, including the final acceptance testing described above, have been satisfactorily completed, Owner will issue a Letter of Completion to Contractor indicating the date of such completion, which shall be the start of the warranty period.

END OF SECTION 28 00 01

SECTION 28 05 01

SECURITY WIRING AND CONDUIT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish and install wire and cable for the security system components shown on the security Design Package with the exception of the CAT 6/6A cables. CAT 6/6A cable will be furnished, installed, terminated, labeled, and tested by owner.
- B. Work Included:
 - 1. Furnish, install, label, and document wire and cable to provide all electrical and data circuits for the Access Control System and any other associated work shown on the security Design Package.
 - 2. Furnish and install Security Junction Boxes (SJB's) and associated back panels.
 - 3. Terminate low voltage conductors, and install all of the security components.
 - 4. Coordinate with Owner and System Designer for all aspects of work and schedule.
 - 5. Conduit, back boxes and junction boxes to support wiring and mounting of security devices on walls and ceilings.
 - 6. Close coordination with Owner, other contractors and/or subcontractors, and System Designer will be required for all items in "Work By Others" section below.
- C. Work By Others:
 - 1. 120VAC Emergency Power Circuits provided by Owner.
 - 2. Owner will furnish, install, terminate to biscuit jack on field device end, and test CAT 6/6A cable for all security IP devices. Owner will label all CAT 6/6A with permanent tags in a standard format.

1.02 RELATED SECTIONS

- A. Section 28 00 01 - Security General Requirements
- B. Section 28 08 11 - Security Testing
- C. Section 28 10 01 - Access Control System Expansion

1.03 BASIC DEFINITIONS

- A. Abbreviations:
 - 1. ACS: Access Control System

PART 2 - PRODUCTS

2.01 WORK INCLUDED

- A. Provide all materials listed in both this section and the Design Package unless specifically excluded or modified in other portions of the contract documents.

- B. Cable pulls are scheduled in the Design Package. Use the cable brand and type shown unless a substitute has been specifically approved by Owner.

2.02 MATERIALS

A. Cables

- 1. Refer to cable legend for specific cable types required for each location.
- 2. Service loops are required for all cable runs, see PART 3 - EXECUTION - GENERAL INSTALLATION for specific requirements at various locations.

B. Cable Hangers

- 1. Provide UL Listed J-hook type cable hangers for use in plenum environments. Use appropriate style as determined by jobsite conditions.
- 2. Provide hangers at 4-foot maximum intervals along every wire run.

C. Wire Duct within Enclosures

- 1. Tyton or Panduit wire duct with slotted sidewall and cover, or approved equal.
- 2. Size for specific backboard or backplane space and load requirements.

D. Cable Ties

- 1. Provide hook and loop type, plenum-rated cable ties, sized appropriately to the conditions, to prevent damage to the cables where bundled.
- 2. Do not use plastic zip-ties or twist ties to secure cabling.

E. Cable and Wire Labels

- 1. Provide Brady, Panduit, or approved equal heat-shrink polyolefin or self-laminating vinyl wrap-around, machine-printed labels for all cables.

F. Wire Termination

- 1. If screw type terminals are specified, terminal strip connections shall be locking, tongue style, pressure crimp, solderless spade lug.

G. Wire Splicing

- 1. Provide UL Listed 3M Insulation Displacement Connector (IDC) moisture resistant seal or approved equal, where splicing is approved by Owner.

H. Conduit, Backboxes, Junction Boxes, and Fittings

- 1. Contractor scope:
 - a. Provide conduit, backboxes, and j-boxes where shown and for all permanently concealed spaces, e.g. above hard ceilings where access will not be available after the sheetrock is installed, and within walls.
 - b. Provide Security Junction Boxes (SJB's) with metal back plane above dropped ceiling, or exposed wall in non-ceiling areas, where shown in design documents. Use NEMA 4 rated enclosures in all exterior and/or weather-exposed locations.
 - c. Existing walls: Provide mounting rings and pull strings to the rings.

2. Other's scope:
 - a. Provide conduit and wire required for 120VAC Emergency Power Circuit for ACS panels.
- I. Protection from Elements
 1. Provide gaskets, weather proofing sealant, fire caulking or stopping, as appropriate, to ensure all junctions are protected from water, fire, smoke, or other environmental damage.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

- A. Install all necessary backboxes, pull boxes, connectors, supports, cable and wire to provide a complete and reliable system. Verify exact location of all boxes, cable and wiring runs with Owner in advance of any installation.
- B. Obtain specific approval from Owner for the location and appearance of any cable or raceway that is not hidden. If approved, install as inconspicuously as possible and parallel with building lines.
- C. Provide service loops for all cable runs.
 1. ACS Cable Runs
 - a. No less than 2' in each Security Junction Box.
 - b. No less than 3' at each head end, either coiled in gutter or in cable tray above panel enclosure.
- D. Comb wire groups. Route and support all wiring and cable to achieve the highest quality appearance in all areas, including the interior of all panels and racks.
- E. Install and terminate cable in accordance with manufacturer's installation manuals and applicable codes.
- F. Install all wiring on walls in exposed areas in EMT conduit, or other Owner approved raceway, unless otherwise noted or exempted.
- G. For cable runs above suspended ceilings, clamp cable to underside of deck or use cable hangers. Do not allow cable to lie on top of the ceiling panels. In open ceiling areas, clamp cable to underside of deck in pan troughs or along beams to aid concealment. Do not attach wiring or raceway to suspended ceiling support wires.
- H. Install cable hangers at 4-foot maximum intervals with cable ties roughly centered between hangers and at other appropriate locations to keep the wire groups neat. Run wiring at least 1 foot above the ceiling where possible.
- I. Wiring Inspection
 1. Visually inspect wire and cable for faulty insulation prior to installation.
 2. After installation, visually inspect all wiring for flaws such as cuts, punctures, and abrasions. If any flaws are found, replace the wire at no additional cost to Owner.

- J. All wires installed between buildings or in underground conduit: Test with a megohmmeter. A reading of 20 megohms minimum is required. Test between each conductor and ground, and between each pair of conductors.
- K. Prior to termination: Test each conductor for voltage. Replace and re-pull any conductor that has voltage. Splices are not an acceptable alternative.
- L. Where it is cost effective, and with Owner's written permission, conduits and raceways from more than one detail point may be grouped together only if:
 - 1. Physical space allows.
 - 2. Appropriately sized junction boxes are used.
 - 3. Conduits do not exceed the maximum 40% fill.
 - 4. The total bends and length of conduit run allow the wire or cable to be pulled without causing damage to it.
- M. Run wires continuously from termination to termination without splices. Splices at certain junction box locations may be allowed at the discretion of Owner. Make recommendations for splices at such points to Owner and obtain written approval to proceed.
 - 1. Where splices are allowed, join the wire with heat shrink solder sleeves to ensure mechanical and electrical integrity. An acceptable alternative is to utilize UL-rated IDC moisture resistant seal connectors to connect the cables.
- N. Support wire and cable in all equipment, terminal cabinets, pull boxes, vertical risers, and horizontal runs with wire duct and strap-type supports.
 - 1. Furnish and install appropriate wire duct at all locations where wire duct is required for tidy wire management, whether shown on elevations or not.
 - 2. Arrange cables neatly to allow inspection, removal, and replacement.
 - 3. Lace cables as required.
 - 4. Spot tie wire bundles with cable ties and secure to panels.
 - 5. Where terminal strips with more than 10 terminals are used, furnish and install wire duct on both sides. At no time shall wires cross over terminal boards.
 - 6. For any exposed wiring, all cables are to be neatly tethered and either braided or combined using cable ties.
- O. Protect cable ends within enclosures until they are terminated to prevent shorting risk.
- P. Protect wiring from kinks.
- Q. At no time subject any fiber optic cable to any bend of less than 8-inch radius.
- R. For new conduit runs:
 - 1. Run 1 pull string for all conduits less than 3".
 - 2. Run 1 pull rope for all 3" or larger sized conduits.
 - 3. Use pull tape with appropriate tensile rating and printed length markings for conduit runs over 20' (6m).
- S. Provide grommets and strain relief material where necessary to avoid abrasion and excess tension on wiring.

- T. Adhere to the shielding design shown on the Design Package, particularly the requirements of 00.06.501, Shield Termination. Proper shielding is crucial to maintaining data integrity.

3.02 IDENTIFICATION AND LABELING

- A. Identify all wiring with labels on both ends. Reference PART 2 - PRODUCTS - MATERIALS - Cable and Wire Labels above.
 - 1. Clearly indicate the function, source, or destination of all wiring.
 - 2. Use the Cable Labeling Format and appropriate naming convention shown on Detail 00.05.501 for all wiring.
 - 3. Provide labels at both ends of each cable.
 - 4. Temporary Labels
 - a. If temporary labels are used during installation, use permanent marker to hand write the appropriate information.
 - b. Prior to termination, install the permanent labels and remove all temporary labels.
 - 5. Permanent Labels
 - a. At every cable termination point, install machine-printed labels for all cables.
 - b. Handwritten labels are not acceptable.
- B. If the Cable Labeling Format as shown on the drawings cannot be used, submit a substitute format that complies with the intent to provide documentation for end-to-end tracing of all wiring.

END OF SECTION 28 05 01

SECTION 28 05 11

CYBER SECURITY

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Configure Cyber Security parameters of all IP components. Key characteristics are:
 - 1. Harden the setup of all field devices.

1.02 RELATED SECTIONS

- 1. Section 28 00 01 - Security General Requirements
- 2. Section 28 08 11 - Security Testing
- 3. Section 28 10 01 - Access Control System Expansion

1.03 BASIC DEFINITIONS

- A. Abbreviations:
 - 1. IP: Internet Protocol
 - 2. LAN: Local Area Network
- B. Terminology:
 - 1. Server: Central Server Computer - Could be a virtual server

1.04 SUBMITTALS

- A. Submit a cyber hardening planning document that outlines all the hardening activities.
 - 1. Submit a Cyber Hardening Plan that specifies each type of IP connected field device and defines the configurations that will be applied to each type of device in accordance with manufacturer recommendations and Owner IT guidelines.
 - 2. Work with Owner to define Contractor's appropriate access to the systems for remote support.
 - a. Define required access.
 - b. Owner will define guidelines that provide the required access in a safe and secure manner that meets the Owner's security policies.

1.05 SYSTEM TRAINING

- A. None required.

1.06 ASSISTANCE

- A. Coordinate with the Owner for any of the settings that are within Owner's direct operational control and which form a component of the cyber security plan.

1.07 OVERVIEW OF THE CYBER PROTECTION PROGRAM

- A. The following is an overview of the cyber hardening configuration and is provided to define a framework for understanding the design philosophy:
 - 1. Security System Devices:
 - a. Each device must be hardened at the time of installation of that device on the LAN.
 - b. Strong passwords.
 - c. Current firmware.
 - d. Least required permissions.
 - e. Disable unused services.
 - f. Any security device connected to a network requires cyber hardening.

PART 2 - PRODUCTS

2.01 WORK INCLUDED

- A. Furnish and install all of the materials listed below in PART 2 - PRODUCTS - MATERIALS and in the Details.

2.02 MATERIALS

- A. There are no physical materials specified by this section.

2.03 SPARE PARTS

- A. None.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

- A. This contract involves currently functioning systems. Coordination with Owner is critical. Do not interrupt any functioning system without complying with the provisions of SECTION 28 00 01 - SECURITY GENERAL REQUIREMENTS.

3.02 CYBER PROTECTION IMPLEMENTATION

- A. Work with Owner to agree on a strong password procedure for use for each type of device. Securely provide to Owner complete list of username and password combinations for all devices included in scope.
- B. Enable encryption for access to the device using HTTPS. Once the device is fully configured, disable web services.
- C. Turn off or disable all extra, non-used options:
 - 1. UPnP
 - 2. Bonjour
 - 3. AVHS
 - 4. Discovery Services

5. Link-local Address
 6. SOCKS
 7. QoS
 8. SSH
- D. Set network time throughout the system using a link to Owner's NTP.
- E. Where there is a Radius server supporting 802.1x, set up the certificates and enable IEEE 802.1x.
- F. Field Devices:
1. Harden each device according to documented Cyber Hardening Plan as described in PART 1 - GENERAL - SUBMITTALS above, at the time of installation of that device on Owner network.
 2. Set strong passwords in accordance with procedure agreed upon with Owner.
 3. Confirm firmware is up to date.
 4. Configure device to have the least privileges required for intended functionality.
 5. Disable any unused services.

3.03 SYSTEM TESTING

- A. Validate each configuration setting.
- B. Test the port security feature by disconnecting a field IP device. The port should shut down and require manual action to reactivate the port.

3.04 WARRANTY SERVICE

- A. Provide normal and emergency warranty service in accordance with the provisions stated in SECTION 28 00 01 - GENERAL SECURITY REQUIREMENTS.

END OF SECTION 28 05 11

SECTION 28 08 11

SECURITY TESTING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The close out of a project is the culmination of many steps from inception to fully operational. Testing is the critical process required by SECTION 28 00 01 - SECURITY GENERAL REQUIREMENTS that leads to project completion and the Owner's assurance by the Integrator that every design element is fully functional. Test all installed work using the SBD ASSIST web portal (ASSIST) to document the results.
- B. Complete mandatory ASSIST testing training to understand requirements for testing and documenting points prior to providing a bid. The testing process requires on-line forms to be filled out and photos taken and uploaded to ASSIST at different stages of the installation process. The demo of this testing is at: <https://sbd.us/training/testing>. Log in with the following information:
 - 1. User Name is "testing"
 - 2. Password is "site"
 - 3. Training Code is: MCC250807
- C. Test each defined point and element shown on the drawings and details to verify the appropriate operation. Submit test results, documented on the ASSIST forms located at <https://sbd.us/Assist/Login>. Use the same location for documenting the Final Acceptance Test. Refer to PART 1 - GENERAL - SUBMITTALS to obtain login information.
 - 1. Certain network devices require photos of the device identification label, which is not always visible after installation, so the photos must be taken prior to installation.
 - 2. Photos of completed work are required as part of this testing process to clearly show the quality of the installation.
 - 3. After all information and required photos have been entered for each point, certify the point as "Tested". Notify Owner and Designer once all points are certified as "Tested".
 - 4. The Contractor, Designer, and other Owner Representatives will participate in the Final Acceptance Test once all of the system elements are verified as "Completed" in ASSIST by the Owner and/or Designer.

1.02 RELATED SECTIONS

- A. Section 28 00 01 - Security General Requirements
- B. Section 28 05 01 - Security Wiring and Conduit
- C. Section 28 05 11 - Cyber Security
- D. Section 28 10 01 - Access Control System Expansion

1.03 SUBMITTALS

- A. Submit written test procedures for approval in accordance with specification SECTION 28 00 01 - SECURITY GENERAL REQUIREMENTS - PART 1 - GENERAL - SUBMITTALS.
- B. Each user will need a unique login to access ASSIST.
 - 1. Provide a first and last name, company, and email address for each user to the Designer. The users should be the technicians who will be performing the testing as well as project managers to oversee progress.
 - 2. ASSIST includes 2-factor authentication using a one-time password (OTP) code that can be sent via text or email. A new code is required each time a user signs in.
 - a. If a user would like to receive the OTP via text message, provide the mobile phone number with mobile phone service provider.
 - 3. SBD will create accounts for each user and send a direct link to ASSIST along with login information following account creation.
- C. After Contractor testing and at least 5 working days prior to Final Acceptance Testing, ensure the testing and photo documentation is completed online for review. Submit a report to the owner of all points by building and floor or plan sheet to verify completion of contractor testing.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Provide test data electronically as described above in PART 1 - GENERAL - SUBMITTALS.
- B. Obtain from Owner a minimum of 2 access cards. One card should have full access to all readers. The other card should have no access to any readers.

PART 3 - EXECUTION

3.01 GENERAL

- A. Execute the tests required to completely test all work. All work must be physically functional at its point of use and be operationally integrated into the appropriate system.
- B. Use ASSIST to provide photo and written test results on web forms. Where appropriate, load printouts from test equipment and/or the systems being tested.
 - 1. Refer to line drawings as examples of the views desired to capture the appropriate information. Take photos in an orientation that best matches the subject and adjust rotation in ASSIST as required. For example, a single door is best captured in portrait orientation, but a double door is best captured in a landscape orientation. Photo resolution and quality must be sufficient to clearly capture the appropriate information, such as legible wire labels, visible terminations, specific door components, etc. Photos to confirm punch list corrections must be zoomed in on the area where the correction was made, and high quality to clearly show that the issue(s) have been corrected.

2. In the event that sufficient connectivity is not available to complete the testing documentation online while at the jobsite, the ASSIST phone application can be used in an offline mode as long as the necessary plan(s) are downloaded in advance. Alternatively, information and photos can be identified by door or point number and uploaded at a later time. Review requirements for photos and test information prior to initiating testing and upload results once online connection is restored. The same forms will be used for documenting the Final Acceptance Test.
 3. The quality of the information is critical, both data and photos. By marking the “Tested” box, the Integrator is assuring the Owner that the work is neat, high quality, and 100% ready.
 4. All field work will be tested via this process prior to scheduling validation of completion in ASSIST by Owner.
 5. The Owner and/or Designer will review all the data that is marked Tested and will be able to certify each point as Completed once the data appropriately supports the design intent. These forms will be made available to the contractor and to the Owner for review and as a permanent record.
 6. A Final Acceptance Test with the Integrator, Designer, and other Owner Representatives will be scheduled once all of the system elements are Completed. The Designer will create a punch list based on the Final Acceptance Test. When all items on the punch list are resolved, a Letter of Completion will be issued. The date on the Letter of Completion is the start date of the system warranty.
- C. Not all of the information in the web forms is the result of an actual test. Some of the information that is required in the test documentation is for maintenance and represents information such as serial numbers, MAC addresses, and model numbers. Make sure that this information is captured during the installation so that there is no need to uninstall any component just to be able to fill out the testing information. Other information defines the location and space.
- D. In any case where a wiring or component change or correction is made to a field point or a panel/IDF/MDF equipment area, or configuration/programming is changed, all potentially affected system components must be retested to ensure complete functionality as designed.
- E. In any case where an Access Control System Macro and/or Task is changed, all potentially affected system components must be retested to ensure complete functionality as designed.
- F. Provide qualified personnel to test each type of work.

3.02 SPECIFIC TEST DEFINITIONS

- A. Overall
1. The tests included in this specification section are the base level of testing requirements.
 2. In addition to the tests defined by ASSIST, perform all manufacturer recommended test procedures that exercise all normal system attributes.
 3. In the absence of manufacturer-defined tests, use a copy of the operator manual to define tests that demonstrate the operation of each system function. Initial and

date each function successfully demonstrated and provide the pages with the closeout documents.

B. Physical Access Control System Tests

1. 2-state alarm point, test an open and a short as an alarm, and the single end-of-line as normal.

Open circuit	Alarm
Short circuit	Alarm
Single end-of-line resistor current value	Normal

2. 4-state alarm point, test for alarm as one value and one state, normal as another value and state, and short and open as discrete values and as supervisory (trouble) states.

Open Circuit	Trouble
Short circuit	Trouble
First end-of-line resistor current value	Alarm
Second end-of-line resistor current value	Normal

3. Record the monitor messages on the test forms.

C. Dynamic Battery Test

1. Test each battery.
 - a. Measure the voltage across a 3-ohm high watt resistor for 20 seconds.
 - b. Verify that the voltage does not drop below 90% of the rated voltage.
2. Replace any battery for which the measured voltage drops below 90% of the rated voltage during the 20-second test.

3.03 TEST FORMS

- A. The test forms are automatically assigned as part of the ASSIST testing.
 1. Where a specific item on a test form does not apply, select or type "N/A".
 2. Where a test form does not apply, but a similar form would be more applicable, submit a substitute form for approval prior to commencing any relevant testing.

END OF SECTION 28 08 11

SECTION 28 10 01

ACCESS CONTROL SYSTEM EXPANSION

PART 1 -GENERAL

1.01 SECTION INCLUDES

- A. Furnish and install Access Control System security equipment as shown on the contract drawings and specified herein.
- B. Provide a complete Access Control System expansion, including installation, programming, and testing of equipment and all associated conductors, at the locations shown, for use with the Owner's existing Acre AccessIt! Access Control System.

1.02 RELATED SECTIONS

- A. Section 28 00 01 - Security General Requirements
- B. Section 28 05 01 - Security Wiring and Conduit
- C. Section 28 05 11 - Cyber Security
- D. Section 28 08 11 - Security Testing

1.03 REFERENCES

- A. Abbreviations
 - 1. ACS: Access Control System
 - 2. ASTM: American Society for Testing and Materials
 - 3. IEC: International Electrotechnical Commission
 - 4. IEEE: The Institute of Electrical and Electronics Engineers
- B. Reference Standards
 - 1. IEEE 802.3 - Ethernet Standards
 - 2. Enclosure Ingress Protection Ratings IP68, IP69K
 - 3. IOS 9001

1.04 SYSTEM OVERVIEW

- A. The following overview of the ACS is provided to define a framework for understanding the system design approach:
 - 1. There is an existing Acre ACS head end server with a personnel database. All components added in this scope will need to be tied into this system.
 - 2. Main database at the Server:
 - a. Will contain cardholder card numbers and access information that will be used to control door unlocking.
 - b. May also store other personnel related data such as name, address, role, etc.

- c. Normally, no door unlocking decisions will be made at the Server level.
- 3. The ACS panels will be installed in the IDFs and will be monitored by the Owner.
- 4. Remote panel databases:
 - a. Will be subsets of the main Server database.
 - b. Will store access permissions downloaded from the Server.
 - c. Normally, all door unlocking decisions will be made at the remote panel level.
 - d. Initially, all remote panel databases will be empty.
 - e. Data will be downloaded from the Server on demand and edited as needed.

1.05 QUALITY ASSURANCE

- A. Work shall be performed by an approved Security Systems Integrator for ACS panel termination, calibration, system startup, programming, and testing. The Security Systems Integrator shall be a company specializing in access control systems with a minimum of 3 years of experience on systems of similar size and scope.
- B. Security Systems Integrator shall be an Acre authorized integration partner with certified installer/maintainer personnel. Technicians that are terminating to ACS panels for this project shall have current Acre AccessIt! certifications.

1.06 SUBMITTALS

- A. Provide submittals as required in SECTION 28 00 01, SECURITY GENERAL REQUIREMENTS.
- B. Provide submittals for approval as outlined below:
 - 1. Product data sheets for proposed substitutions
 - 2. Bill of materials
 - 3. Warranty information
 - 4. Instruction manuals
 - 5. Point-to-point detail drawing revisions
 - 6. As-built documents
 - 7. Additional field test form(s), as required
 - 8. Field test reports

1.07 PERFORMANCE EVALUATION/TERMINATION

- A. Furnish and install a complete ACS which meets or exceeds the following performance requirements:
 - 1. NEC Class II limited power requirements standards.
 - 2. Underwriters' Laboratories Compliance:

- a. Satisfy all UL 294 requirements both in terms of its design and documentation, and also in the completed installation. All aspects of the enclosures, power supplies, relays, circuit breakers, controllers, reader-port circuit boards, I.P. interface hardware, and cabling must meet the requirements of UL 294.
3. Ethernet Connectivity:
 - a. Hardware shall have the ability to connect controllers, servers, and workstations through Ethernet to Owner's Local Area Network (LAN) or Wide Area Network (WAN).
4. Event Processing Performance:
 - a. Maximum card access transaction time of 0.5 seconds
 - b. Alarm processing time of 4 seconds or less
5. Door Re-locking:
 - a. Shall have the ability to program each door to re-lock after either of the following events:
 - 1) Door has been opened (provide ability to re-lock within no more than 0.5 seconds)
 - 2) After a certain (Owner-defined) length of time (e.g. five seconds) regardless of whether the door was opened or not
6. Shunt Request-to-Exit (REX):
 - a. Shall have the ability to shunt a door forced alarm upon receipt of a signal from a REX device, without sending an unlock signal to the door.
7. Controllers:
 - a. Shall have online-upgradeable firmware so that remote application version updates can be safely accomplished.
 - b. Can concurrently process different credential formats (Smart, NFC & BLE).
 - c. Can support OSDP V2 (Secure Channel) with encryption for connection of credential readers, with control of LED and beeper functionality.
 - d. Can support up to 64 readers.
 - e. Can support at least 100,000 cardholders.
8. Report Management:
 - a. Provide users with the ability to use common report-generating software to create a report on any of the system's database or history records and to store and manipulate reports within the application itself.
9. Alarm Presentation:

- a. Software must present alarms on the alarm screen in a “double-sort” fashion, with priority as the first sort, and initiation time as the second sort. Sort order must refresh in real time upon each addition or deletion of active alarm events.
 - b. Owner must have the ability to govern permissions granted to alarm management screen operators and the option to deny them the ability to modify sort preferences.
- 10. User Permissions:
 - a. Software offers a “matrix” approach to the granting of operator permissions. Provide different groups of operators with the ability to manipulate any programmable set of system functions.
 - b. Owner must have the ability to limit or control operators’ permissions to view, edit, add, or delete any fields or attributes of the database.
- 11. Operator Audit Trail:
 - a. Create a record of, and provide the ability to create reports of, all operator actions within the ACS software including:
 - 1) The time a change was made by an operator
 - 2) The operator’s name
 - 3) The item’s state before the change was made
 - 4) The item’s state after the change
- 12. Badging Integration with ACS:
 - a. Badging system software is (or can be) seamlessly integrated with access control software. Ensure that when updates or upgrades become available for the access control portion of the software, the badging software application (along with technical support available for it) is also concurrently updated or integration is re-verified.
- 13. Double Card Tap:
 - a. Can execute virtually any Owner-defined command following a double card tap.

B. SYSTEM TRAINING

- 1. None required.

PART 2 -PRODUCTS

2.01 GENERAL

- A. Furnish and install all materials identified below and in the Security Design Package as defined in SECTION 28 00 01 - SECURITY GENERAL REQUIREMENTS.
- B. Scope includes products from the following manufacturers:

1. Acre (including Mercury boards)
 2. Altronix
 3. GRI
 4. Schlage
 5. STI
 6. Von Duprin
 7. Wavelynx
- C. Security equipment is constantly being developed, adapted, and upgraded. Validate that the products are current and latest model prior to ordering. If there is any change from the specified products, submit the new version for approval.
- D. Carefully review all bid documents for exact type and quantity of parts and devices required to support field and head-end security components.
- E. Provide appropriate conductors for all security devices, per Security Details and SECTION 28 05 01 SECURITY WIRING AND CONDUIT.
- F. Furnish and install materials, equipment, software, and any other support necessary to comply with the requirements articulated above in Part 1 – PERFORMANCE EVALUATION/ TERMINATION.

2.02 MATERIALS

- A. ACCESS CONTROL PANELS WITH POWER SUPPLIES
1. Review Detail 07.05.001 and Schedule 00.30.001 for configurations for each enclosure. The components and quantities of boards are based on the requirements identified for this project. The panels need to have sufficient boards to support the associated card readers, inputs, and outputs. Where additional boards are required for this scope, they have been identified in the Panel Schedule. If additional boards are required that were not captured in the Panel Schedule, notify Owner and System Designer. All enclosures should be keyed-alike.
- B. CARD READERS
1. The main card readers will be Wavelynx Apex models, which support the LEAF custom keyset and mobile credentials. Refer to Security Detail 00.08.001 for part panel
 2. Use Single Gang Readers as the default and Mullion Readers where the reader must mount on a mullion. Do not mount a Single Gang Reader on a mullion.
- C. CREDENTIALS
1. Provide 100 Wavelynx EV3 fobs. Coordinate with Owner to confirm specific LEAF part number prior to ordering.
- D. DOOR COMPONENTS
1. This project has a mix of door conditions. There are existing doors and hardware that will need to be modified. There are existing doors where the hardware will need to be entirely replaced and the door will need to be prepped for the new

hardware. Refer to the Door Detail Schedule for specific information for each door.

2. Review equipment lists on each detail to determine the components required for each door type. Existing doors have some required components already installed. Refer to the Door Detail Schedule to determine which of the components need to be added for each location. Where AX and BX AD-300 hardware has been specified, refer to the Door Detail Schedule to select the appropriate version (Cylindrical, Mortise, or Panic).
3. The Door Detail Schedule lists the current finish. Where there are a mix of hardware finishes in a building, confirm with Owner prior to ordering.
4. Furnish and install pick plates (Latch Gard) for any outward swinging exterior doors. Any existing pick plates that are compatible with the new hardware may be reused.

E. ADDITIONAL ALARM SENSORS AND BUTTONS

1. A variety of alarm sensors and buttons are included in the design. Refer to the Security Design Package for specific components required.

2.03 SPARE PARTS

- A. (2) Wavelynx Single Gang card readers
- B. (2) Wavelynx Mullion card readers

PART 3 -EXECUTION

3.01 GENERAL INSTALLATION

- A. This contract involves currently functioning systems. Coordination with Owner is critical. Do not interrupt any functioning system without complying with the provisions of SECTION 28 00 01, SECURITY GENERAL REQUIREMENTS.
- B. Locate and install all security devices and components in accordance with the Design Package.
- C. Install and terminate appropriate conductors for all security devices, per Security Details and SECTION 28 05 01 SECURITY WIRING AND CONDUIT.
- D. Wire doors in a home run configuration back to the panel locations according to the drawings. Notify Owner if there are conditions that might prevent this solution. Exceptions may be granted on a case-by-case basis.
- E. Install all accessible components with tamper-resistant security fasteners.
- F. All cables, both internal and external to panels and junction boxes must be cleanly routed, combed, and supported by Velcro or equal ties.
- G. Provide labeled keys to the lockable panels and cabinets to Owner.
- H. Connect and terminate the tamper switches for the panels and power supplies as shown in the Security Details.
- I. Install End-of-Line-Resistors (EOLR)s on each supervised input at the field end of the line. The security panel is the "Head" of the line and the actual contact or sensing point is the "End" of the line. EOLRs are shown on the details where required.

- J. Comply with the wire marking and panel labeling provisions stated in SECTION 28 05 01, SECURITY WIRING AND CONDUIT.
- K. Provide device labeling on all security panels and label inside cables according to Security Details.
- L. Install all products in this section following the product manufacturer's published installation and application manuals and guidelines.
- M. Lock hardware or any other device that can be connected to a computer or other electronic device for the purpose of programming or configuration, and is protected by a password, shall have the password changed at the time of installation to a new, owner approved password.

3.02 SYSTEM INSTALLATION

- A. Do not apply power to a remote panel until the manufacturer's grounding requirements are complete.
- B. Coordinate this work with Owner's IT and Capital Projects departments. A significant effort has been made by Owner's IT department to plan the integration of these security systems into the infrastructure of the Owner in a secure and resilient way.

3.03 SYSTEM PROGRAMMING

- A. Obtain Load Schedule/Programming Sheet from Owner prior to programming. Propose any required updates and obtain final written approval by Owner.
- B. Program the hardware as defined in the Security Design Package and Load Schedule/Programming Sheet. Complete programming two weeks prior to testing.
- C. Naming conventions:
 - 1. Points, tasks, macros and any other elements in the system programming which receive a title or name must consistently follow a structured, Owner-approved naming convention.
 - 2. Where naming conventions have been defined in the design documents, they must be followed. Any proposed changes must be submitted for review and receive written approval from Owner prior to implementation.
 - 3. If naming conventions have not been defined, submit proposed format for review and approval in writing by Owner prior to implementation.
- D. If a database backup is required, Owner coordination is required in advance.
- E. Door Timing:
 - 1. Unless otherwise instructed by Owner, use the following parameters:
 - a. Door unlock time: 5 seconds
 - b. Door held open time: 60 seconds
- F. Lockdown configuration:
 - 1. Lockdown configuration is required in this scope. Refer to the Lockdown System Configuration document included in the Design Documents

- G. Backup Lockdown loops are present at remote sites to ensure lockdown functionality in the case of an ISP outage preventing communication with the ACS server on Main Campus. Refer to details 01.10.001 and 01.10.002.
 - 1. Modification of the existing loops will be required at both Los Banos and the Business Resource Center.
 - 2. Installation of additional components and enclosures will be required, as specified in design documents.

3.04 SYSTEM FIRMWARE

- A. Apply the current firmware version for each panel at the time it is connected to the LAN.

3.05 SYSTEM TESTING

- A. Use the test procedures submitted as outlined in SECTION 28 08 11, SECURITY TESTING to test and evaluate the system.
- B. After the system is completely installed in accordance with the Specifications, Drawings, and Details, conduct a full systems test. Ensure all documentation is complete in ASSIST.
- C. Provide system event reports of Final Acceptance Testing to validate the results.

3.06 WARRANTY SERVICE

- A. Provide warranty service in accordance with SECTION 28 00 01, SECURITY GENERAL REQUIREMENTS.

END OF SECTION 28 05 11