

# USC GUIDELINE SECURITY SPECIFICATIONS

## TABLE OF CONTENTS

<u>NUMBER</u>	<u>TITLE</u>	<u>ISSUE DATE</u>
27 3226	EMERGENCY PHONES	10/30/2013
28 0500	SECURITY GENERAL REQUIREMENTS	10/30/2013
28 0553	IDENTIFICATION	10/30/2013
28 0700	SECURITY SYSTEM INTEGRATION	10/30/2013
28 0800	SECURITY TESTING AND COMMISSIONING	10/30/2013
28 1300	EACS	10/30/2013
28 1600	EIDS	10/30/2013
28 1605	DURESS MONITORING	10/30/2013
28 2300	VSS	10/30/2013

END OF TABLE OF CONTENTS

## USC GUIDELINE SECURITY SPECIFICATIONS

### SECTION 27 32 26

#### EMERGENCY PHONE SYSTEM

##### PART 1 GENERAL

###### 1.1 DESCRIPTION

- A. This specification section covers the furnishing and installation of Emergency Phones at the [indicate site and building] location.
- B. Contractor shall furnish and install hardware devices, mounting brackets, power supplies, switches, controls, and other components of the system as shown and specified.
- C. 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, Electrical.

###### 1.2 PRECEDENCE

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.

###### 1.3 GENERAL CONDITIONS

In accordance with Section 28 05 00, Security System General Requirements

###### 1.4 RELATED WORK

- A. In accordance with Section 28 05 00, Security System General Requirements
- B. In accordance with Section 28 07 00, Security System Integration
- C. In accordance with Section 28 08 00, Security System Testing and Commissioning

###### 1.5 APPLICABLE PUBLICATIONS

In accordance with Section 28 05 00, Security System General Requirements

###### 1.6 SHOP DRAWINGS & EQUIPMENT SUBMITTAL

In accordance with Section 28 05 00, Security System General Requirements

###### 1.7 OPERATING AND MAINTENANCE MANUALS

In accordance with Section 28 05 00, Security System General Requirements.

###### 1.8 SERVICE AND MAINTENANCE

In accordance with Section 28 05 00, Security System General Requirements

###### 1.9 TRAINING

In accordance with Section 28 05 00, Security System General Requirements

###### 1.10 WARRANTY

In accordance with Section 28 05 00, Security System General Requirements

###### 1.11 TECHNICAL REQUIREMENTS, EMERGENCY PHONE SYSTEM

###### A. General

1. The following information is provided to establish required system performance for a complete operating Emergency Phone System for the [site and/or facility]. Some

functions and performance requirements noted herein are supported and supplied by existing systems in concert with new equipment which shall be provided by the Contractor under this scope of work. Contractor shall provide equipment, wiring and programming at all sites as necessary to provide a complete system as described herein and as shown on the drawings.

2. Components provided under this scope of work shall be compatible with the USC communications phone system and connected to the EACS portion of this project.
  3. Contractor shall be responsible for providing equipment and connections to achieve specified system performance.
- B. Purpose: The system is designed to allow communications from the device to the programmed responding location allowing the responder to assist the caller.
1. Attributes
    - a. General
      - 1) Exterior Emergency phones with visual locating devices are located in public areas outside the buildings as shown on plans.
      - 2) *[Emergency phones are located in areas of refuge identified on the plan drawings.]*
    - b. Exterior Emergency Phones
      - 1) Emergency phones utilize the campus phone system dialing automatically to call a monitoring location.
      - 2) Each device shall be equipped with a blue light identifying the location of activation.
      - 3) Each device shall be equipped with a single pushbutton which will activate the calling function and the blue location light.
      - 4) Emergency phone shall be provided in a wall mounted or free standing configuration, as indicated on the plans.
      - 5) Enclosures and equipment shall be weatherproof, and specifically rated for exterior use.
    - c. Interior Emergency Phones
      - 1) Emergency phones utilize the campus phone system dialing automatically to call a monitoring location.
      - 2) Each device shall be equipped with a blue light identifying the location of activation.
      - 3) Each device shall be equipped with a single pushbutton which will activate the calling function and the blue location light.
      - 4) Emergency phone shall be provided in a wall mounted configuration, as indicated on the plans.

## **PART 2 PRODUCTS**

### **2.1 GENERAL**

- A. Product Acceptability: The Products section contains lists of acceptable products. If product substitutions are proposed, they must be made based upon a comparison of equivalence to the product specified and compatible with the existing USC system. Considerations may include but shall not be limited to functional, physical, aesthetic and/or interface aspects. The Owner shall be the sole judge of whether or not a submitted substitution is deemed to be

"equivalent" to that specified. Contractor may not use contractor proprietary interface modules for connections between field devices and controller

- B. Equipment shall have a UL Listed mark on the product.
- C. Assemblies shall be approved by a recognized agency acceptable to the City of Los Angeles.

## 2.2 EMERGENCY PHONE

A. Provide Emergency Phones in the following configurations. Phones shall incorporate communication compatible with the Owner's communications system.

### 1. Exterior Tower Phone

a. Provide "Talk-A-Phone" model ETP-MT/R Phone Tower, with the following characteristics.

- 1) Vandal-resistant, exterior enclosure.
- 2) Blue Strobe Light housed in protective acrylic housing that is activated when the call button is pressed
- 3) Constant light Faceplate
- 4) [Indicate low voltage version where required by project] Low voltage version shall be 24VDC.
- 5) Provide color as required by Owner [Color: Red]
- 6) Shall meet ADA requirements for access
- 7) UL listed

b. Provide ETP-400C single button faceplate with Red Emergency activation button

- 1) LED indicator for hearing impaired
- 2) Built in auto-dialer
- 3) Auto-Answer
- 4) Second number dial on first number no answer
- 5) Unit shall be handsfree after activation
- 6) Stainless Steel faceplate
- 7) Shall include speaker for audible communication
- 8) Shall include activation button.

### 2. Exterior Wall Phone

a. Provide "Talk-A-Phone" model ETP-WM Phone

- 1) [Indicate flush or surface mounting] Vandal-resistant
- 2) Blue Light housed in protective acrylic housing
- 3) Activated Strobe light when call button is pressed
- 4) Constant light Faceplate
- 5) [Indicate low voltage version where required by project] Low voltage version shall be 24VDC.
- 6) Provide color as required by Owner
- 7) UL listed

- b. Provide "Talk-A-Phone" model ETP-400C single button faceplate with Red Emergency activation button
      - 1) LED indicator for hearing impaired
      - 2) Built in auto-dialer
      - 3) Auto-Answer
      - 4) Second number dial on first number no answer
      - 5) Unit shall be handsfree after activation
      - 6) Stainless Steel faceplate
      - 7) Shall include speaker for audible communication
      - 8) Shall include activation button
- 3. Interior Wall Phone
  - a. Provide "Talk-A-Phone" model ETP-400C Phone
    - 1) Stainless Steel faceplate
    - 2) Single push button activation
    - 3) LED indicator for hearing impaired
    - 4) Built in auto-dialer
    - 5) Auto-Answer
    - 6) Second number dial on first number no answer
    - 7) UL listed
  - b. Provide [indicate] surface / flush mounting enclosure to match phone.

### 2.3 WIRE AND CABLE

- A. General: Cables which are not installed in conduit shall be a version of the specified cable rated for use in plenums.
- B. System cable: Provide cable as shown below, or as recommended by the Manufacturer.
  - 1. Emergency Phone: Belden 5302GE, 1 Pair Twisted Shielded 18AWG, with 2 conductor 18AWG, or equal.
  - 2. Alarm Monitoring: Belden 5500FE, 1Pair Shielded 22AWG, or equal, for conection to EACS.
  - 3. Network Cable: As required by Owner Infrastructure.
- C. Cable installed below grade shall be rated for immersion in water.

## PART 3 EXECUTION

### 3.1 GENERAL

In accordance with Section 28 05 00, Security System General Requirements.

### 3.2 EMERGENCY PHONE INTEGRATION

- A. Provide access control system integration equipment, software programming, in accordance with Section 28 07 00, Security System System Integration. In addition provide specific integration schemes noted.

### 3.3 GROUNDING PROCEDURES

Provide grounding of all systems and equipment in accordance with Section 28 05 00, Security System General Requirements.

### 3.4 WIRE AND CABLE INSTALLATION PRACTICES

Provide wire and cable installation in accordance with Section 28 05 00, Security System General Requirements.

### 3.5 START-UP RESPONSIBILITY

Provide start-up services for all systems and equipment in accordance with Security System General Requirements, Section 28 05 00.

### 3.6 PRELIMINARY INSPECTION AND TESTING

Provide preliminary inspection and testing services for systems and equipment in accordance with Testing and Commissioning, Section 28 08 00.

### 3.7 SYSTEM PERFORMANCE TESTING AND ADJUSTING PROCEDURES

A. Provide performance testing and adjusting of systems and equipment in accordance with Testing and Commissioning, Section 28 08 00.

#### B. Emergency Phone

1. Verify phone indicator is on
2. Verify phone indicator flashes when activated.
3. Verify voice communication with called station
4. Verify visual indicator is on during normal operation
5. Verify visual indicator strobe function is activated during use.

### 3.8 BURN-IN PERFORMANCE PERIOD

Provide a burn-in performance period to demonstrate the stability of the system, in accordance with Testing and Commissioning, Section 28 08 00.

### 3.9 COMMISSIONING AND VALIDATION

Provide commissioning and validation services to prove and improve the effectiveness of the system, in accordance with Testing and Commissioning, Section 28 08 00.

### 3.10 TRAINING

A. Provide training requirements of Security System General Requirements Section 28 05 00

### 3.11 FINAL PROCEDURES

Perform final procedures in accordance with section 28 05 00, Security System General Requirements.

END OF SECTION

**USC GUIDELINE SECURITY SPECIFICATIONS**  
**SECTION 28 05 00**  
**SECURITY SYSTEMS GENERAL REQUIREMENTS**

**PART 1 GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 BASIC DEFINITIONS**

- A. The University of Southern California (USC) shall be hereinafter referred to in this document as Owner and the respondent shall be referred to as Contractor. The term Owner includes direct employees and other appointed Owner agents such as Architects or consultants. These agents may be requested by Owner to represent Owner in undertaking certain project tasks.
- B. "Days": As used in the specifications, the word "days" means calendar days including weekend days.
- C. "Provide": As used in the plans and specifications, the word "provide" means to furnish, install, connect, program, test, commission and warranty the subject material or services.
- D. Specified Items - Substitutions
  - 1. "No Acceptable Equal": The exact make and model number identified in this Specification shall be provided without exception. Where compatibility with existing systems is specified, and where a specific make or model number is not identified, the Contractor shall provide equipment which is compatible with, and equivalent to, existing equipment of the same description and type, and serving the same purpose.
  - 2. "Or Equal": An item may be substituted for the specified item provided that in every technical and aesthetic sense, the substituted item provides the same or better capability than the specified item, and is fully compatible with the new or existing systems specified. For expansion of existing systems, the item shall also be approved and fully supported by the existing system manufacturer. The Owner shall be the sole authority to determine the equality of substituted products with specified items.
  - 3. "Aesthetics", or "Aesthetic Considerations": If aesthetic considerations are involved in either the 'or equal' or 'approved equal' category, this shall be a consideration in approving or disapproving the proposed substitute. If the proposed substitute is aesthetically unacceptable to the Owner, then the specified, or another technically equal item, shall be provided.
- E. "Beneficial Use": Each component of a system is not considered available for beneficial use until and unless all components and conditions have been fulfilled to make the system fully operational.

**1.3 LOCATION AND ACCESS TO PROJECT**

- A. Project is located at the USC [campus] [building(s)], in Los Angeles, California.
- B. Any access using normal highway routing to the facility is acceptable.
- C. Permission for access to this campus or facility may be revoked for any and all persons who violate facility traffic regulations including speed limits, parking restrictions and directions of the responsible Owner or project personnel. Contractor's personnel, operating forces, and delivery personnel shall be made aware of and shall comply at all times with the regulations and the direction of responsible Owner and project personnel.

**1.4 SITE ACCESS CONTROL**

- A. The Contractor shall obtain rules and regulations from the Owner's Project Manager [Capital Construction Development (CCD)] [Facilities Management Services (FMS)] [CSS] and shall train construction and delivery personnel on their requirements. Contractor shall consistently remain in contact with [CCD] [FMS] [CSS] for revisions to project policy, and shall be held fully responsible for monitoring and ensuring Contractor and Subcontractor compliance to USC Access Control rules and regulations as directed by [CCD] [FMS] [CSS].
- B. Contractor's personnel, operating forces, and delivery personnel shall strictly follow all rules and regulations concerning Access Control at the University, including but not limited to those relating to credentialing, background checks, access to restricted and secure areas, parking, the handling of Access Control information, and the use of the facility.

#### 1.5 DESCRIPTION

- A. General Description: This specification section covers general requirements for the furnishing, installation and testing of a complete expansion to the Owner' electronic access control and video surveillance system.
- B. Furnish and install Electric Access Control System (EACS) software programming, hardware devices, mounting brackets, power supplies, switches, equipment cabinets, controls, consoles and other components of the system as shown and specified.
- C. Insert when project requires [Furnish and install Security Intercom System (SIS) sub-system to the EACS, but not limited to control equipment, power supplies, remote intercom units and master station units, as shown and specified].
- D. Insert when project requires [Furnish and install Emergency Phone system, as shown and specified.]
- E. Insert when project requires [Furnish and install [intrusion detection and] duress system devices and Electronic Intrusion Detection System (EIDS) transmitter panel, as shown and specified.]
- F. Insert when project requires [Furnish and install Video Surveillance System (VSS) software programming, hardware devices, mounting brackets, power supplies, video servers, Network Video Recorders (NVR), and equipment enclosures, as shown and specified.]
- G. Insert when project requires [Furnish and install electrified locking hardware, special power supplies, door and frame modifications, and other components and services of the locking mechanisms as shown and specified.]
- H. Insert when project requires [Furnish and install outlets, junction boxes, pull boxes, conduit, connectors, wiring, and other accessories necessary to complete the system installation. Requirements shall be in accordance with [Division 26, Electrical Work.]

#### 1.6 EXISTING SYSTEMS AND SUBSYSTEMS

- A. Electronic Access Control System (EACS)
  - 1. The primary system for centrally managed physical access control within USC is the OnGuard System, manufactured by Lenel Systems International (Lenel). The deployed card readers are magnetic stripe technology readers and proximity/multi-technology card readers, compatible with USCards supported by the EACS. The system generally comprises a wide-area data network, enterprise server, enterprise administrative and monitoring clients, communications client, remote system controllers, and card readers compliant with the campus credentialing system.
  - 2. The system operates seamlessly with the USCard credentialing system, sharing appropriate records of the Credentialing database to support the control of physical access. New work shall maintain this integration.
  - 3. The Lenel OnGuard system is integrated with a Lenel Pro-level Video surveillance system (VSS), to provide automatic call-up and pre-positioning of cameras associated



with alarm and emergency event activity. New devices installed as part of this work must replicate this level of integration.

4. Modifications to the existing USC EACS System

- a. The Contractor shall use and expand, as necessary, the existing Lenel system as part of this work, including but not limited to the addition of servers, workstations, input/output modules, control keyboards, computers, software, software licensing for new equipment, system programming, wiring, and system controllers.
- b. Contractor shall subcontract with the Owner's EACS service and maintenance providers to ensure new and modified systems are fully and seamlessly integrated into the existing system.
- c. A Lenel OnGuard Client is located in the Parking Structure 'A' (PSA) Access Control Command Center, located on the ground floor of the parking structure. This Client is currently used to program the access rights for USCard credentials used on the campus.
- d. The system shall support existing mag stripe, HID and XceedID proximity card readers and card population.

B. Credentialing System

1. The existing system is designed to provide credentials for USC teaching staff, hospital staff, doctors, students, contractors/vendors, support, and administrative personnel. The credential is used for access control, as well as numerous other campus services requiring identity validation.
2. The system is currently managed by the USCard Services department. Appropriate fields of the credentialing system database are automatically created on the EACS for use in access control configuration.
3. Modifications to the existing credentialing system are not a part of this work.

C. [Include with system design] Video Surveillance System (VSS)

1. Lenel Digital Video System

- a. The primary system for recording and monitoring campus cameras is the digital video surveillance system manufactured by Lenel. The system provides visual monitoring of strategic areas of USC campus grounds and/or facilities, and is entirely LAN network-based, using TCP/IP encoders, digital video recorders, digital recording media, network video recorders and "virtual" switching / viewing software.
- b. Command and Control: The system is monitored and managed from the Department of Public Safety (DPS) Police Dispatch Center, via VSS workstations and the appropriate viewing software. Connectivity is made via the campus Local Area Network (LAN).
- c. The VSS system is integrated with the access control system (Lenel OnGuard PRO-I Edition) to provide automatic call-up, real-time recording, and pre-positioning of cameras associated with alarm and detection events.

2. Modifications to the Existing System

- a. The Lenel expansion shall be fully integrated with the existing Lenel system located at the [University Park Campus] [Health Sciences Campus] [Residential] [Building(s)] and shall provide services and functions identical to the existing system in addition to any new functions and services specified herein.
- b. Local Monitoring and Control: The system may be monitored by any suitably configured computer workstation with the appropriate Lenel viewing client software that is [existing] [added] [modified] by this project.

- c. The Contractor shall use and expand, as necessary, the existing system as part of this work, including but not limited to servers, encoders, recorders, input/output modules, control keyboards, workstations, software, software licensing, wiring, cameras, and appurtenances.
  - d. Contractor shall coordinate with the USC Career and Protective Services (CAPS) Department to ensure new and modified systems are fully and seamlessly integrated into the existing system.
  - e. [Contractor shall subcontract with the Owner's service and maintenance providers to ensure new additions and modified systems are fully and seamlessly integrated into the existing system.]
- D. Contractor and Manufacturer shall guarantee in writing equipment and software which is added as part of this work is fully compatible with the existing system, is fully supported by the existing system manufacturer(s), and is configured as described in the specifications. New equipment shall be fully warranted by the Contractor as specified herein.
  - E. Contractor shall ensure hardware and software is fully integrated into the existing system to present a single, seamless operating system. Contractor shall fully develop and support all hardware and software integration schemes.
  - F. Control components which require unique, or proprietary, hardware or software interfaces to achieve parity with the existing system architecture are not acceptable.
  - G. If records exist, drawings and diagrams of the existing systems will be made available, through the Owner, to the Contractor. The Contractor shall survey, research and confirm the existing equipment and configuration in-place, and coordinate expansion of the systems with the Owner to avoid any interruption in services.
  - H. Contractor shall guarantee the existing equipment and software, including (user programming, cardholder and tenant databases) shall be protected from corruption or damage during the installation, programming and commissioning process.

#### 1.7 SCOPE OF WORK

- A. Systems: Provide an Electronic Access Control System (EACS) expansion to the Lenel system, a [Video Surveillance System (VSS)] expansion of the Lenel system, [Security Communication System (SCS)] [Emergency Phone system] [Electronic Intrusion Detection] [Duress Monitoring System] [Security Communications Local Intercom System] complete per the contract schedule, and with acceptable engineering and installation practices as described herein.
- B. Areas of work include, but are not limited to:
  - 1. PSA Central Command Center
  - 2. Buildings identified on the plans for the [UPC or HSC] Campus
    - a. [Building 1]
    - b. [Building 2]
- C. Services: Contractor shall provide the following services complete and as scheduled:
  - 1. Project Planning and Management
  - 2. Shop Engineering and Documentation
  - 3. Wiring and Installation Diagrams
  - 4. Submittals
  - 5. Coordination
  - 6. System Installation

7. System Integration
8. Training
9. Start-up Testing
10. Commissioning
11. Close out As-Build documentation
12. Warranty

## 1.8 BID RESPONSE

### A. Bidders Responsibility

1. Contractor is responsible for verifying actual conditions by visiting the site, reviewing the Specifications and drawings, and to advise the Owner in writing of any conditions which may adversely affect the work. If any necessary exceptions are discovered, Contractor shall immediately notify the Owner for resolution prior to any change in the design or the scope, and any resultant claim for additional compensation.
2. The Bid Response must fulfill the intent of the Drawings and Specifications to the satisfaction of the Owner to qualify as an acceptable Bid Response.

### B. Substitutions

1. Catalog and/or model numbers for Owner approved equipment and systems are included as a part of these specifications.
2. Any substitution proposed by Contractor for catalog numbers and brands or trade names noted or specified herein shall be solely at the Contractors risk. The Owner maintains sole authority to hold a review of substitutions, and sole authority to approve or disapprove of substitutions for any reason.
3. The Owner's acceptance of substitutions shall not relieve Contractor from complying with the requirements of the drawings and Specifications. Contractor shall be responsible, at Contractor's sole expense, for any changes resulting from Contractor's substitutions that affect other parts of Contractor's own work or the work of others.

### C. Technical Bid Submission: At bid submission, submit one (1) copy of the following

1. An equipment list with names of Manufacturers of primary systems ([EACS, VSS, SIS, EPS, EIDS, DMS]) including model numbers and technical information on equipment proposed.
2. A letter from the manufacturer(s) stating that the system Contractor is an authorized distributor or installer of the proposed primary systems ([EACS, VSS, EIDS,DMS]).
3. Indicate complete and total compliance with the provisions of these Specifications by letter or by submittal of the bid response forms, signed by an officer of the corporation, or a principal if other ownership currently exists. If there are exceptions to the specifications, submit a statement listing every technical and operational parameter wherein the submitted equipment or system may vary from that which was originally specified. If the submitter fails to list a particular variance and his submittal is accepted, but is subsequently deemed to be unsatisfactory because of the unlisted variance, the submitter must replace or modify such equipment at once and without cost to the Owner.
4. Failure of Contractor to submit the above information shall be considered non-responsive to the bid requirements and sufficient cause for bid rejection. .

### D. Examination of Site and Verification of Existing Conditions

1. Contractor shall have visited the site and familiarized himself with existing conditions prior to submitting his bid and shall be prepared to carry out the work within the existing

limitations. Failure or neglect to do so shall not relieve Contractor of his responsibilities nor entitle him to additional compensation for work overlooked and not included in his bid.

2. Existing structures and utilities shown on the contract drawings are obtained from project drawings and exploratory field examination. Contractor shall verify existing conditions and required dimensions, including those shown on the drawings, by measurement at the job site. Contractor shall notify the Owner of exceptions before proceeding with the work.
  3. Contractor shall confirm the availability of the proper power source for each piece of specified equipment, through site visits and drawings as necessary. Where proper power does not exist, Contractor shall identify this situation to the Owner for guidance. Should the Owner direct Contractor to provide the necessary power, it shall be provided using equipment and methods authorized by the Owner.
- E. Data Accuracy: Absolute accuracy of information regarding existing conditions cannot be guaranteed. The Drawings and Specifications are for the assistance and guidance of Contractor and exact locations, distances, and elevations will be governed by actual field conditions. Where variations from the bid documents are required, such variations shall be approved by the Owner.

## 1.9 QUALIFICATIONS

### A. General

1. The approved Contractor shall be responsible for satisfactory operation of the system and its certification.
2. Approval of the Owner is required of products or services of the proposed manufacturer, suppliers and installers and will be based upon conformance to the specifications.

### B. Manufacturer Qualifications

1. System components shall be furnished by manufacturers of established reputation and experience who shall have produced similar equipment and who shall be able to refer to similar installations rendering satisfactory service.
2. The manufacturer's products shall have been in satisfactory operation on at least three similar installations for not less than three years. Contractor shall submit a list of similar installations.
3. Components including, but not limited to, card access controllers, cameras, intercoms, computers, and power supplies shall have been tested and listed by Underwriters Laboratories, Inc., Factory Mutual Systems, or other approved independent testing laboratory.
4. Components installed within a common enclosure shall be approved by an agency recognized by the City of Los Angeles Department of Building and Safety as an assembly.

### C. Contractor Qualifications

1. Contractor shall be a pre-qualified supplier of USC purchasing, Facility Management Services and Career and Protective Services (CAPS) departments.
2. Hold current legally required California State Contractor's licenses necessary to accomplish the installation and activation of the described system at the facilities indicated. Contractor shall submit copies of licenses to Owner prior to the start of work.
3. Hold current legally required state registrations required to meet local requirements for submittal drawings.
4. Have manufacturers trained and certified engineering, field technicians and programming staff.

5. Indicate complete and total compliance with the provisions of these Specifications by letter or by submittal of the bid response forms, signed by an officer of the corporation, or a principal if other ownership exists. In addition, the letter or forms shall include a complete listing of exceptions, if any.

#### 1.10 PHASING PLAN

- A. The work [shall / may] be performed in phases.
  1. Each phase of work shall include, but not be limited to the provision of applicable conduit, power, equipment, programming and documentation to provide a complete, operational system, as described herein.
  2. Coordinate work phasing with the Owner
  3. Within 14 days after award of the project, submit a preliminary phasing plan to the Owner for review. The Shop Drawings shall reflect the process of the phasing plan.
- B. The Phasing Plan shall be designed to allow the continuation of USC business and activities, to support uninterrupted electronic Access Control services, where possible, and to limit down-time of critical systems, during construction. Each system element shall be addressed individually. Phases and system elements may be combined, or rearranged, based upon planned work schedules and available labor to perform the work.
- C. Work which requires shut-down of, or any part, of the Access Control systems shall be scheduled and performed between the hours of 11:30 PM to 5:30 AM unless written approval for alternate time is provided by the Owner.
- D. Phasing Plan: The proposed phasing plan should address the upgrades with the following approach:
  1. Install or coordinate with the Owner on the installation of the required network connectivity.
  2. Install, power, and test the control equipment, including but not limited to video recorders, EACS controllers, computer workstations, and application software. Where new equipment will replace existing equipment in the same location, provide temporary installation of the new equipment.
  3. Install conduit, cable, and new devices. Connect to controls, and test.
  4. Install conduit, cable, and devices which replace existing devices. Connect to controls, and test.
  5. Where new equipment replaces existing equipment in the same location, remove existing and install the new equipment. Reconnect pre-tested devices, and test again.
  6. Program, configure, test and commission the system as required by the Owner and these specifications.
- E. Modifications to the Phasing plan may be submitted by the Contractor, after the Shop Drawings and Equipment Submittals have been reviewed and accepted for installation. The Contractors' modified phasing plan shall be based upon Contractor's actual proposed equipment, project schedule and installation planning. The proposed phasing plan shall be designed to achieve the same goals as the phasing plan contained herein, including but not limited to, the successful upgrade of existing Access Control systems while maintaining full Access Control at the facility. The Contractors' plan must be accepted by the Owner prior to any demolition or installation of equipment and cable. The Owner reserves the right to modify the proposed plan, or any part thereof.

#### 1.11 GENERAL CONDITIONS

- A. Contract Compliance: Provide the Systems and Services in accordance with the conditions and system descriptions as described in Part 1 of each specification section. Provide specified

or Owner approved equivalent alternate products as described in Part 2 of each specification section. Utilize specified procedures and practices as described in Part 3 of each specification section.

- B. Codes: Furnish material and workmanship for this work in conformance with applicable legal and code requirements.
- C. Inclusive Work: Provide sufficient time, material and manpower to verify, revise or refine the Bid Drawings as necessary to develop fully engineered Shop Drawings as required by the General Requirements, and in order for this work to realize complete, stable and safe operation.

#### 1.12 RELATED WORK

- A. General
  - 1. Observe interface procedures to related work.
  - 2. Coordinate with the Owner on aspects of aesthetic interface.
  - 3. Coordination: Coordinate this work with related work by other contractors.
  - 4. Coordinate with existing construction, equipment and field devices.
  - 5. Equipment provided under this project shall be installed in a manner consistent with architectural, operational, service and maintenance considerations.
  - 6. "Coordinate" related work not specifically mentioned below.
- B. Owner's General Provisions and Work Contract
- C. Division 01, General Requirements: Coordinate this work with applicable sections of the Owner's General Requirements and General Provisions.
- D. Division 08, Openings: Coordinate this work with applicable sections of Division 08, Openings, including but not limited to the following.
  - 1. Schedules for Openings: Coordinate Access Control requirements with door, frame, and hardware schedules.
  - 2. Section 08 70 00 – Hardware, and the University guidelines for door hardware.
  - 3. Door hardware, door and frame modifications shall be provided by the Contractor. Contractor shall coordinate with the Owner on requirements and interfaces with Access Control hardware.
  - 4. Access Doors: Coordinate with the Owner for the provision of access doors where needed to gain access to wiring, boxes, panels and enclosures in walls or ceilings.
- E. Finishes: Coordinate this work with applicable Owner requirements for Finishes, including but not limited to the following.
  - 1. Painting/Patching: Provide painting, patching and repair services to match existing conditions.
  - 2. Painting of walls shall be from corner of nearest wall across repair area to nearest wall on opposite side of repair area.
- F. Division 14, Conveying Equipment: [Insert when elevator work is required] Coordinate this work with applicable Owner requirements of, Conveying Equipment, including but not limited to the following.
  - 1. Owners requirements for Elevator Equipment and Controls
  - 2. Elevator work shall be provided by the [Contractor, Owner].

3. Contractor shall coordinate with the Owner on requirements and interfaces with elevator equipment.
- G. Division 26, Electrical [Insert where required]
1. Coordinate this work with applicable sections of Division 26, Electrical, including but not limited to the following.
    - a. Electrical power distribution sources for existing buildings shall be by the Owner unless otherwise noted. Contractor shall coordinate with the Owner to identify and verify 120-volt power service requirements with the first shop drawing submittal.
    - b. Conduit, boxes, and rough-in material shall be provided and installed by the Contractor, unless otherwise noted.
    - c. Specialty boxes shall be provided by the Contractor and installed by the Contractor, unless otherwise noted.
- H. Division 27, Communications [Insert where required]
1. General: Coordinate this work with applicable sections of Division 27, Communications, including but not limited to structured cabling, fiber optic cabling, telephone, and data communications requirements.
  2. Contractor shall coordinate with the Owner to identify and verify shared cable/pathway, LAN ports, and bandwidth requirements at the time of the first shop drawing submittal.
  3. Section 27 32 26 Emergency Phone  
Provide equipment and services required by related Sections pursuant to the requirements of Section 27 32 26, Emergency Phone
  4. Section 27 51 00 Security Local Intercom System  
Provide equipment and services required by related Sections pursuant to the requirements of Section 27 51 00, Local Intercom System
- I. Division 28, Electronic Safety and Access Control [Insert sections as required by project]
1. Existing Systems: Coordinate with Owner and Owner's existing Service Provider to ensure the existing system(s) are kept in active operation during the course of this project, in keeping with appropriate phases of work. Coordination may require reconfiguration and reprogramming of existing controllers and other system elements. This work will be coordinated by the Contractor, and provided by the Owner or an Owner-selected Service Provider.
  2. Section 28 05 00 – Security System General Requirements  
Provide equipment and services required by related Sections pursuant to the requirements of Section 28 05 00, Security System General Requirements.
  3. Section 28 05 53 – Identification for Electronic Safety and Security  
Provide equipment and services required by related Sections pursuant to the requirements of Section 28 05 53, Identification for Electronic Safety and Security.
  4. Section 28 07 00 – Security System Integration  
Provide equipment and services required by related Sections pursuant to the requirements of Section 28 07 00, Access Control System Integration.
  5. Section 28 08 00 – Testing and Commissioning  
Provide equipment and services required by related Sections pursuant to the requirements of Section 28 08 00, Testing and Commissioning.
  6. Section 28 13 00 - Electronic Access Control System

Provide equipment and services required by Section 28 13 00, Alarm and Access Control System, pursuant to the requirements of this section.

7. Section 28 16 00 Electronic Intrusion Detection System

Provide equipment and services required by Section 28 16 00, Electronic Intrusion Detection System, pursuant to the requirements of this section

8. Section 28 16 05 Duress Monitoring System

Provide equipment and services required by Section 28 16 05, Duress Monitoring System, pursuant to the requirements of this section.

9. Section 28 23 00 - Video Surveillance System

Provide equipment and services required by Section 28 23 00, Video Surveillance System, pursuant to the requirements of this section.

J. Coordinate related work with door hardware including but not limited to automatic motorized door opening, power assisted door opening and powered panic hardware.

### 1.13 PRECEDENCE

- A. If any statement in this or any other Access Control specification is in conflict with any provision of the General Terms and Conditions of the contract, the provision stated in the General Terms and Conditions shall take precedence. Any questions that result from such potential conflict, which require additional interpretation and guidance shall be immediately brought to the Owner's attention.
- B. Obtain, read and comply with Division 26, Electrical and applicable sub-sections of the contract specifications. Where a discrepancy may exist between any applicable Division 26 sub-sections and directions as contained herein, this section shall govern.
- C. Architectural drawings shall have precedence over other drawings in regard to dimensions and location.

### 1.14 APPLICABLE PUBLICATIONS

- A. The edition of the appropriate code or standard at the time of permitting shall govern all applications.
- B. Standards: Perform the work in accordance with the following standards:
  - 1. UL Underwriters Laboratories, Inc., UL 294, UL 1076, ULC
  - 2. EIA Electrical Industries Association.
  - 3. NTSC National Television Standards Committee.
  - 4. NEMA National Electrical Manufacturers Association.
  - 5. NECA National Electrical Contractor's Association, Standards of Installation.
  - 6. NFPA National Fire Protection Association 101 Life Safety Code
  - 7. CCR Title 24 California Building Code
  - 8. CCR Title 24 California Electric Code
  - 9. ADA Americans With Disabilities Act
  - 10. FCC Part 15, Part 68
  - 11. IEEE RS 170 variable standard NTSC (color camera broadcast)
  - 12. OSHPD Office of State Health Planning Department {Omit if the project is not hospital related}
- C. Where more than one code or regulation is applicable, the more stringent shall apply.



- D. Cable installation, identification and termination shall be performed in accordance with manufacturer's installation manuals in addition to the above applicable codes.
- E. In the absence of manufacturer's recommendations on conductor applications, the Contractor shall ensure that the cable selected meets all technical requirements of the location of its installation, and of the equipment to be installed.

#### 1.15 SHOP DRAWING & EQUIPMENT SUBMITTAL

- A. General: Bid documents, including drawings, details and specifications are considered conceptual in nature, and provide direction on products and project requirements. Contractor is given a choice of methods that may be incorporated into the system. These choices may affect the overall design, configuration and installation of the proposed system.
- B. Contractor Responsibility: Prepare and submit shop drawings, rendered in the latest AutoCad format, which show details of all work to insure proper installation of the work using those materials and equipment specified or allowed under the approved plans and specifications. A complete Shop Drawing submittal package shall consist of Drawings, Equipment Data Sheet Submittals and an Acceptance Testing Plan.
- C. Completeness: The Equipment Submittals, Acceptance Testing Plan and the Shop Drawings should be submitted as a complete and contiguous package. Partial or unmarked submittals will not be accepted for review.
- D. Scheduling: A schedule of shop drawing submissions shall be submitted for the Owner's review on a form acceptable to the Owner within ten (10) days after award of the Contract. The schedule of shop drawing submissions shall include as a minimum, but not limited to the requirements stated herein.
- E. Requirements: Provide the following information complete, and in the manner described herein:
  - 1. Hardware, Application Software, and Network Requirements: A system description including analysis and calculations used in sizing equipment required by the security systems. The description shall show how the equipment will operate as a system to meet the performance requirements of the systems. The following information shall be supplied as a minimum:
    - a. Server(s) processor(s), disk space and memory size [expansion of existing]
    - b. Workstation(s) processor(s), disk space and memory size
    - c. Description of site (field) control equipment (Controllers/Field Panels, NVR's, Modules) and their configuration
    - d. Operating System(s) Software, where software is provided or upgraded
    - e. Application Software, with Optional and Custom Software Modules supplied in this project
    - f. Integration Schemes: Proposed connectivity, software, development requirements, and SDK information, for inter-system communication.
    - g. Network bandwidth and reliability requirements
    - h. Number and location of LAN ports required
    - i. Other specific network requirements, preferences, and constraints
    - j. Backup/archive system size and configuration
    - k. Start-up operations
    - l. System power requirements and Uninterruptible Power Supply (UPS) sizing
    - m. Device/component environmental requirements (cooling and or heating parameters)

2. Shop Drawings: Shop Drawings shall be numbered consecutively and shall accurately and distinctly present the following information:
  - a. Title Sheet
  - b. Floor Plans: Showing devices, pull boxes, cabinets, conduits and conductors in their proposed locations with device numbering scheme.
  - c. Riser Diagram: Showing all conduit relationships between devices shown on the Floor Plans. Show all power sources.
  - d. Single-Line/Block Diagrams: Show signal relationships of controls and devices within the system.
  - e. Custom Assembly Diagrams: For each custom assembly such as Access Control Terminal Cabinets, receptacle assemblies, or door control panels, provide an assembly drawing illustrating the appearance of the assembled device. Include dimensions, assembly components, and functional attributes (momentary or alternate action switch, lens color, panel finish)
  - f. Component Connection Diagrams
    - 1) For each equipment component such as a computer, video switcher, camera or video recorder, show the rear elevation of the device and all connectors/terminations as a pictorial.
    - 2) Show the wire designations on connectors. [Typical wiring detail where multiple of same device is provided.]
    - 3) Show a schedule of the wire colors connected to the pins on each device connector.
  - g. Equipment Wiring Diagrams
    - 1) Show a pictorial illustration of each equipment enclosure and/or terminal cabinet, including terminals, components and wiring devices.
    - 2) Show the device nomenclature exactly as shown on the single line diagrams.
    - 3) Terminations: Show every termination and terminating cable, with applicable cable and wire numbers matching the single line diagrams.
      - a) Every termination in the system must be documented.
      - b) Termination information may be rendered as a wiring list(s), if properly coordinated with, and referenced to, typical component and single-line diagrams. Otherwise, the Shop Drawings shall show a pictorial of every component in the system, with its terminations.
    - 4) Show wire colors for each terminal.
    - 5) For each wire exiting the enclosure, show the destination of the wire by floor, room number and the drawing number of the panel where the wire terminates.
  - h. Provide working dimensions and erection dimensions.
  - i. Arrangements and sectional views
  - j. Necessary details, including complete information for making connections between work under this Contract, existing work, and work under other Contracts.
  - k. Stock or standard drawings will not be accepted for review unless full identification and supplementary information is shown thereon in ink or typewritten form.

- l. Duplicate of design drawings may be used where each sheet is modified to reflect contractor coordination, specific requirements of the project and multidiscipline conditions.
  - m. Each Drawing or page shall include:
    - 1) Project name, Project Number and descriptions.
    - 2) Submittal date and space for revision dates.
    - 3) Identification of equipment, product or material.
    - 4) Name of Contractor and Subcontractor.
    - 5) Name of Supplier and Manufacturer.
    - 6) Relation to adjacent structure of material.
    - 7) Physical dimensions, clearly identified.
    - 8) ASTM and Specifications references.
    - 9) Identification of deviations from the Contract Documents.
    - 10) Contractor's stamp, initialed or signed, dated and certifying to review of submittal, certification of field measurements and compliance with Contract.
    - 11) Location at which the equipment or materials are to be installed. Location shall mean both physical location and location relative to other connected or attached material.
3. Equipment Submittals
- a. Provide a Title Page, with project name, Contractors name and address, contact information, date of submission, and submission revision number.
  - b. Provide a Parts List, for proposed equipment, materials, components and devices, listing the following information for each line item:
    - 1) The system type
    - 2) Model number
    - 3) Specification sheet page reference
  - c. Provide Manufacturers Specification Sheet with descriptive information for equipment, materials, components and devices. Number each page, to correspond with the Parts List.
  - d. Clearly delineate (with highlighter, arrow, or underline) on each specification sheet, specific model numbers, options and configurations being proposed for this project.
  - e. Indicate kinds of materials and finishes for equipment where more than one option is presented.
4. Acceptance Testing Plan
- a. Submit a written document detailing the test procedures to be followed in evaluating and proving the installed system(s).
  - b. Provide a sample of the test forms to be used for each system and for each component of each system.
  - c. Include all tests required by the equipment manufacturer and by this Specification.
5. Include where requested by Owner [Spare Parts List: Submit a list of recommended spare parts. Spare parts shall comprise a minimum of 5% or minimum of 2 each of field devices, device termination boards and a minimum of 1 system controller boards. ]

## 6. Training Program

- a. Submit a training program 10 working days prior to scheduled training to be followed in training key employees in the operation and maintenance of the installed system at the project site. The proposed training program shall be designed to provide a level of basic competence with the system for selected personnel. These selected personnel shall then be expected to train other personnel as required, utilizing the training that they have been given and the body of training documentation provided by Contractor. This plan shall comply with the requirements stated in the "Training" section, of these Specifications, all stated hours of which shall be considered to be classroom hours.
  - b. Submit a curriculum to account for, and relate, each subject to actual training time. All required hours shall be accounted for in this curriculum.
  - c. The training plan shall cover the overall system, each individual system, each subsystem, and each component. The plan shall also cover procedures for database management, normal operations, and failure modes with response procedures for each failure. Each procedural item must be applied to each equipment level.
- F. The Owner will return unchecked any submittal which does not contain complete data on the work and full information on related matters.
- G. Verification: The contractor shall check and acknowledge all shop drawings, and shall place his signature on all shop drawings submitted to the Owner. Contractor's signature shall constitute a representation that all quantities, dimensions, field construction criteria, materials, catalog numbers, performance criteria and similar data have been verified and that, in his opinion, the submittal fully meets the requirements of the Contract Documents.
- H. Timeliness: The Contractor shall schedule, prepare and submit a complete shop drawing assembly in accordance with a time-table that will allow his suppliers and manufacturers sufficient time to fabricate, manufacture, inspect test and deliver their respective products to the project site in a timely manner so as to not delay the complete performance of the work.
- I. Departure from Contract Requirements: If shop drawings show departures from the Contract requirements, the Contractor shall make specific mention thereof in his letter of transmittal, otherwise review of such submittals shall not constitute review of the departure. Review of the drawings shall constitute review of the specific subject matter for which the drawings were submitted and not of any other structure, materials, equipment, or apparatus shown on the drawings.
- J. Contractor Responsibility: The review of shop drawings will be general and shall not relieve the Contractor of responsibility for the accuracy of such drawings, nor for the proper fitting and construction of the work, nor for the furnishing of materials or work required by the Contract. No construction called for by shop drawings shall be initiated until such drawings have been reviewed and approved.
- K. Shop Drawing Submittal Review: The procedure in seeking review of the shop drawings shall be as follows:
1. The Contractor shall submit four (4) complete sets of shop drawings with equipment submittals and other descriptive data with one copy of a letter of transmittal to the Owner for review thirty (30) working days after award of the contract. The letter of transmittal shall contain the project name, the Owner's Project Number, the name of the Contractor, the list of drawings submitted including numbers and titles, requests for any review of departures from the contract requirements and any other pertinent information. Drawings submitted for review shall be full-sized drawings, rolled and included with the equipment submittals.

2. Drawings or descriptive data will be stamped "Reviewed", "Furnish as Corrected", "Revise and Resubmit", "Rejected" or 'Submit Specific Item' and one copy with a Letter of Transmittal will be transmitted to the Contractor with the return of submitted documents.
3. If a shop drawing or data is stamped "Reviewed" or "Furnish as Corrected", no additional submittal is required for that shop drawing.
4. If a shop drawing or data is stamped "Revise and Resubmit" or "Rejected", the Contractor shall make the necessary corrections and resubmit the documents as required above. The letter transmitting corrected documents shall indicate that the documents are re-submittals.
5. If any corrections, other than those noted by the Owner, are made on a shop drawing prior to resubmittal, such changes should be pointed out by the Contractor upon resubmittal.
6. The Contractor shall revise and resubmit the shop drawing as required, until they are stamped either "Reviewed" or "Furnish as Corrected."
7. After the Contractor's submittal or resubmittal of shop drawings, the Owner shall be provided with fifteen (15) working days for review. Should the Owner require additional review time above and beyond the stated fifteen (15) working days, the Contractor may ask for a time extension and/or monetary compensation, if they can present valid, factual evidence that actual damages were incurred by the Contractor. The Owner shall determine the amount of the time extension and/or the monetary compensation to be awarded the Contractor.
8. The Owner will not issue a "Notice to Proceed" until shop drawings are reviewed, unless otherwise approved by the Owner.

L. The Contractor shall be responsible for extra costs incurred by the Owner caused by the Contractor's failure to comply with the procedure outline above.

#### 1.16 OPERATING AND MAINTENANCE MANUALS: RECORD DOCUMENTS

- A. Phase One: Notwithstanding requirements specified elsewhere, submit the following labeled as the "Operating and Maintenance Manual" within thirty (30) days after Final Acceptance of the Installation:
  1. Record Drawings: Submit two (2) copies of revised versions of drawings as submitted in the "Shop and Field" and "Equipment Wiring Diagrams" Submittals showing actual device locations, conduit routing, wiring and relationships as they were constructed. Include nomenclature showing as-built wire designations and colors. Drawings shall include room numbers coinciding with Owner space planning numbering. Drawings shall be submitted in electronic editable AutoCADfiles, in ".dwg" format, on CD or DVD disks.
  2. Manuals: Submit two (2) copies of each of the following materials in bound manuals, or electronic PDF copies on CD/DVD discs, with labeled dividers:
    - a. A final Bill of Material for each system.
    - b. Equipment Instruction Manuals: Complete, project specific comprehensive instructions for the operation of devices and equipment provided as part of this work.
    - c. Manufacturers Instruction Manuals: Specification sheets, brochures, Operation Manuals and service sheets published by the manufacturers of the components, devices and equipment provided.
    - d. Include information for testing, repair, troubleshooting, assembly, disassembly and recommended maintenance intervals.
    - e. Provide a replacement parts list with current prices. Include list of recommended spare parts, tools, and instruments for testing and maintenance purpose.

- f. Performance, Test and Adjustment Data: Comprehensive documentation of performance verification according to parameters specified herein.
  - g. Warranties: Provide an executed copy of the Warranty Agreement and copies of all manufacturers' Warranty Registration papers as described herein.
- B. Phase Two: Within fourteen (14) days of receipt of engineer reviewed Operating and Maintenance Manual (Phase One), submit three (3) electronic copies in AutoCAD editable dwg format of the reviewed Record Drawings and three (3) copies of the reviewed Operating and Maintenance Manuals to the Owner, on CD or DVD disks.
- 1. The contractor shall provide to the Owner one (1) copy of new executive and user software, including required graphical maps, on CD-ROM disks.
  - 2. Sufficient information, (detailed schematics of subsystems, assemblies and subassemblies to component level) clearly presented, shall be included to determine compliance with drawings and specifications.

#### 1.17 CHANGES

Before proceeding with changes or claims for extras, Contractor shall provide written notice, secure prior written approval from the Owner, and substantiate actual cost of each change or claim.

#### 1.18 NOTIFICATION

Contractor shall not shut off any existing systems. Contractor shall give the Owner at least 14 calendar day notice of any requirement to shut off or interfere with existing alarm, access control, regulating, computer or other service systems. The Owner will arrange and execute any shutdown. Work such as splicing, where approved, and connections necessary to establish or re-establish any system shall be completed by Contractor in close coordination with the Owner.

#### 1.19 INTERFERENCE WITH THE FACILITY

Transportation and storage of materials at the facility, work involving the facility, and other matters affecting the habitual use by the Owner of its buildings, shall be conducted so as to cause the least possible interference's, and at times and in a manner acceptable to the Owner. Contractor shall make every effort to deliver equipment per the schedule required by the project.

#### 1.20 WARRANTY

- A. Furnish and guarantee maintenance, repair and inspection service for the system using factory trained authorized representatives of the manufacturer of the equipment for a period of one year after final acceptance of the installation.
- B. Third Party Device warranties are transferred from the manufacturer to the contractor, which may then transfer third party warranties to the Owner. Specific third party warranty details, terms and conditions, remedies and procedures, are either expressly stated on, or packaged with, or accompany such products. The warranty period may vary from product to product. These products include but are not limited to devices that are directly interconnected to the field hardware or computers and are purchased directly from the manufacturer. Examples may include but not be limited to; servers, cameras, video recorders, card readers, and computers.
- C. Purpose
  - 1. The Contractor shall repair any system malfunction or installation deficiency discovered by the Owner or their representatives during the burn in and warranty period.
  - 2. The Contractor shall correct any installation deficiencies found against the contract drawings and specifications discovered by the Owner or their representatives during the warranty period.
- D. The service contract shall cover equipment and software related to this contract, and shall provide for the following parts and services, without additional cost to the Owner:

1. Quarterly Inspection, Preventative Maintenance and Testing of equipment and components
  2. Regular Service, Emergency Service, and Call-Back Service
  3. Labor and Repairs
  4. Equipment and Materials
- E. Response Time: Response time for service calls.
1. Emergency service calls where system is not responding to staff directed commands through the computer systems shall be within 2 hours to the project site.
  2. Emergency service calls where controllers are not reporting shall be within 2 hours to the project site.
  3. Normal service calls for device malfunctions shall be within 24 hours during normal working hours to the site.
- F. Repair Time: Contractor shall stock parts in sufficient quantities such that repair or replacement shall be guaranteed within 12-hours. Temporary replacements within this time period shall be acceptable, provided temporary replacements do not compromise system functionality, and provided permanent replacement is achieved within 72 hours. [Contractor may contact owner representative for use of owner supplied spare parts where delay of system repair will have negative impact on system performance]
- G. Commencement: The warranty begins at the time of issuance of the statement of "Final Acceptance of the Installation" by the Owner.
- H. Transferability: The warranty shall be transferable to any person or persons at the discretion of the Owner.
- I. Transmittal: A copy of this Warranty shall be delivered to, and signed for by the Owner's representative whose primary responsibility is the operation and care of these systems. A copy of the signed Warranty document shall be delivered for review as part of the Final Submittals.
- J. Registration: Register Warranty papers for all equipment and software in the name of the Owner. Furnish reproductions of all equipment Warranty papers to the Owner with the Final Submittals.
- K. Sub-Contracting: Warranty service work may not be sub-contracted except with specific permission and approval by the Owner.
- L. Resolution of Conflicts
1. The Owner retains the right to resolve unsatisfactory warranty service performance at any time by declaring the work unsatisfactory, stating specific areas of dissatisfaction in writing.
  2. If the Contractor or his approved subcontractor does not resolve such stated areas of dissatisfaction within thirty (30) days, the Owner may appoint any alternative service agency or person to fulfill the terms of the Warranty; the cost of which shall be borne by the contractor. This action may be taken repeatedly until the Owner is satisfied that Warranty service performance is satisfactory. Satisfactory resolution of a malfunction shall be considered adequate when the device, equipment, system or component which is chronically malfunctioning is brought into compliance with the standards of performance as contained herein and published by the manufacturers of the equipment installed.

## 1.21 PERMITS AND INSPECTIONS

- A. Responsibility: Obtain permits and inspections required for the work. Permit and inspection costs will be borne by the Contractor.
- B. Performance: Perform tests required herein, or as may be reasonably required to demonstrate conformance with the Specifications or with the requirements of any legal authority having jurisdiction.
- C. Review: Obtain approvals from authorities responsible for enforcement of applicable codes and regulations to establish that the work is in compliance with all requirements of reference codes indicated herein and required by the appropriate jurisdiction. Make corrections, changes or additions as required and deliver certificates of acceptance, operation, and/or compliance with the "Operating and Maintenance Manuals" as described herein.

## 1.22 TRAINING

- A. On-Site Training
  - 1. General: Present, review and describe equipment and materials to the Owner and Owner's operating personnel and fully demonstrate the operation and maintenance of the systems, equipment and devices specified herein.
  - 2. Training shall comprise two separate levels of training;
    - a. User Group upon substantial completion of the project
      - 1) User group training shall include a site/building walk through indicating locations of equipment and their usage
      - 2) User group training shall include the operation of workstation capability of system monitoring, command override and report generation.
    - b. Maintenance Group upon completion of the project prior to close out
      - 1) Maintenance group training shall include a site/building walk through indicating locations of equipment and their usage
      - 2) Review of as-build documentation at each controller location
      - 3) Trouble shooting techniques in hardware and software
  - 3. The training shall cover the overall system, each individual system, each subsystem, and each component. The training shall also cover procedures for database management, normal operations, and failure modes with response procedures for each failure. Each procedural item must be applied to each equipment level.
  - 4. Duration: Provide at least 2 hours of on-site training on each system for each group of designated representatives of the Owner at a location convenient to the Owner.
  - 5. On-site training shall commence as follows:
    - a. EACS: Just prior to completion of the first phase of work which establishes the new EACS control over entry and exit portals.
    - b. VSS: Just prior to completion of the first phase of work which establishes the new VSS control over video cameras.
- B. Include with new systems [Software Tutorials: Contractor shall provide a professionally rendered, customized computer-based multimedia tutorial for training a user to use each security system application. Tutorials shall be provided on CD/DVD media.]
  - 1. Provide professional tutorial of each software screen option, with Owner approval of content. Tutorial shall include screen-shots and dynamic recording of screen activity for each system function.



2. Provide end user tutorial for Department of Public Safety approved monitoring, administrative, and response processes. Tutorial shall include screen-shots and dynamic recording of screen activity for each system function.
3. Provide Facilities Management approved tutorials of maintenance and troubleshooting processes. Tutorial shall include screen-shots and dynamic recording of screen activity for each system function.

#### 1.23 SAFEGUARDS AND PROTECTION

- A. Barriers: Provide and maintain suitable barriers, guards, fences and signs where necessary to accommodate the safety of others relative to and/or for the protection of this work.
- B. Regulations: Comply with OSHA, Federal, State, and local regulations and standards pursuant to this work.
- C. Protection: Protect all materials and equipment to prevent the entry or adhesion of any and all foreign material. If necessary, cover equipment with temporary protective material suitable for this purpose.
- D. Finishing: Check, clean and remove defects, scratches, fingerprints and smudges if necessary from all equipment and devices immediately prior to Acceptance of the Installation.
- E. Damage: Replace all damaged or defective material or work at no additional cost prior to Final Acceptance.
- F. Documentation: Provide written description of accidents by workers, students and staff of any incident occurring on the project. Report incident in writing to Owners representative immediately and to the Project Manager for follow up.

#### 1.24 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Delivery: Unless otherwise noted, pre-testing or configuration is required by the contractor, deliver materials to the job site in manufacturer's original unopened containers, clearly labeled with the manufacturer's name and equipment model identification number.
- B. Storage and Handling: Store and protect equipment in a manner which will preclude damage.

#### 1.25 EQUIPMENT COMPATIBILITY REQUIREMENTS

While individual items of equipment may meet the equipment specifications and in fact meet the system specifications, the total system shall be designed so that the combination of equipment actually employed does not produce any undesirable effects such as signal distortion, noise, transients or crosstalk interference's when electrically associated with itself or other equipment.

#### 1.26 OWNER'S RIGHT TO USE EQUIPMENT

The Owner reserves the right to use equipment, material and services provided as part of this work prior to Acceptance of the Work, without incurring additional charges and without commencement of the Warranty period.

## **PART 2 PRODUCTS**

### 2.1 GENERAL

- A. These general criteria shall apply to "Part 2-Products" of all Access Control specifications that are a part of this work.
- B. Product Acceptability: Products sections contain lists of Owner acceptable products. If product substitutions are proposed, they must be made based upon a comparison of equivalence to the product specified. Considerations may include but shall not be limited to functional, physical, aesthetic and/or interface aspects. The Owner shall be the sole judge of whether or not a submitted substitution is deemed to be "equivalent" to that specified.

- C. Manufacturers Specification Reference: Where a specific material, devices equipment or systems are specified directly, the current manufacturers' specification for the same becomes a part of these specifications, as if completely elaborated herein.
- D. Equipment shall be new and the current model of a standard product of a manufacturer of record. A manufacturer of record shall be defined as a company whose main occupation is the manufacture for sale of the items of equipment supplied.
- E. For each item of equipment offered, manufacturer shall maintain:
  - 1. A factory production line.
  - 2. A stock of replacement parts.
  - 3. Engineering drawings, specifications, operating manuals and maintenance manuals.
  - 4. Manufacturer shall have published and distributed descriptive literature and equipment specifications on each item of equipment offered.
- F. Complete System: Auxiliary and incidental equipment necessary for the complete operation and protection of the systems specified herein shall be furnished and installed as if specified in full.
- G. Similar Devices: Similar devices within a system shall be identical unless specific color variances are required by the Owner or Architect.
- H. Safety: Unless otherwise specified, equipment shall be UL rated individually and listed as an assembly. Electronic equipment shall be of the dead front type, having no exposed live electrical connections, terminals or exposures to hands-on operating surfaces or other exposed surfaces during any power-on condition. Every live electrical connection, terminal or exposure shall be covered with durable, removable insulating material.
- I. Rack Mounting: Rack-mounted electronic equipment shall be specifically designed or modified for standard 19-inch rack mounting unless otherwise noted.
- J. Keying: Key panels identically where provided for similar usage within a system. Coordinate lock types with Owner.
- K. Framing: Floor supported units shall be substantially framed and supported. All bolted connections shall be made with self-locking devices.
- L. Aesthetics: Coordinate console or control panels so that their general appearance is similar. Provide locking panel covers on recessed, semi-recessed and surface mounted control panels not located in equipment rooms. Control panels shall be contained within or mounted to formed and welded aluminum or steel backboxes. Operating panels shall be recessed within the backbox to a depth sufficient to permit a locking hinge panel cover to close completely without affecting any device within the enclosure.
- M. No contractor proprietary equipment will be permitted without prior approval from the Owner.
- N. Operational Voltage: Devices connected to the fuse or breaker protected electrical system and all auxiliary equipment necessary for the operation of the equipment associated with systems specified herein shall be designed to operate from 105 to 130 volt, 60 Hertz, alternating current service, with stable performance, fully in accordance with these specifications, and shall have integral fuse or circuit breaker protection.
- O. Contractor-fabricated items shall be provided with fuses that indicate when they are blown or defective.
- P. Protection devices shall be located to facilitate replacement, resetting or observation of status without demounting the associated unit and/or de-energizing adjacent equipment.

- Q. Manufacturer's Recommendations: Components and devices shall be operated in accordance with recommendations of the manufacturer and shall contain sufficient permanent identification to facilitate replacement.
- R. City Of Los Angeles Testing Requirements
  - 1. Equipment, devices, and assemblies shall meet the City of Los Angeles' requirements for listing and labeling, which includes UL listing and labeling for manufactured equipment.
  - 2. UL Listing: For devices and assemblies with proper UL listing and labeling, stickers shall be accessible and visible to the Inspectors. Paperwork shall also be available during inspections and shall be provided to the Owner as part of the close out documentation.
  - 3. Unlisted Devices and Assemblies: Devices and assemblies without prior listing from testing authorities accepted by the City of Los Angeles, shall be tested by an agency acceptable to the City of Los Angeles prior to inspection, to obtain a listing and label. Documentation on the testing and approval shall be provided to the Owner as part of the close out documentation.

## 2.2 MISCELLANEOUS PRODUCTS

- A. Cabinets: Hoffman, Lenel, Rittal or equal, assembled and wired with all components and as indicated on the drawings. Coordinate color, location, and trim with the Owner.
- B. Cable Termination Devices: Screw-Type Barrier Blocks: Marathon/Kulka 601 or Kulka 601-3700 Series, TRW-Cinch, 140, 141 and 142 Series, Phoenix or Buchanan.
- C. Relays: Control relays to be provided by the Contractor shall meet or exceed the following
  - 1. Provide U.L. listed single pole, double throw (SPDT) type, unless otherwise noted on the drawings, with silver tin oxide contacts.
  - 2. They shall have a contact rating of 250 V AC/DC at 6A on normally open contacts and 2A on normally closed contacts.
  - 3. Control relay bases shall be UL listed, DIN rail mounted style, and shall be compatible with the proposed control relay. They shall have screw terminals for all wiring leads accepting conductors up to size 14 AWG. Relay bases shall have provisions for accepting machine printed labels.
  - 4. Control Relays: Provide relays and bases by Potter & Brumfield, Square D, or equal.
  - 5. Power Relays: Provide American Electronic Components "Durakool" mercury wetted relays or equal by Potter & Brumfield.
- D. Wire and Cable Management: Provide Thomas and Betts Ty-Duct Series of Slotted Wiring Ducts, or equal by Marathon, or Eaton. Wiring duct shall be used within cabinets, enclosures, and terminal boxes for the distribution and management of cables within the enclosures. Provide compatible mounting hardware, end caps, labeling and appurtenances to form a complete wire management system. Comply with manufacturers' recommended maximum fill schedules.
- E. Theft Proof Screws
  - 1. Provide Tamperproof security fasteners for the installation of security equipment, cabinets, enclosures and pull boxes in accessible locations. Provide Bryce Fastener PentaPlus series, TP3 style by Tamperproof Screw Company, or equal by Hudson Fastener.
  - 2. Provide six (6) compatible screw drivers and transfer to the Owner prior to final acceptance testing.
- F. Equipment Enclosure
  - 1. Indoor Wall Mount Rack Enclosures

- a. Provide Atlas WMA Series, or Bud Cabinets Emperor Series, or equal, sectional wall cabinets, with door and mounting rails for standard 19" rack mount equipment.
  - b. Cabinet shall be in three sections: solid door, center section, and rear section. Door and center section shall swing out, permitting service from the rear without disassembling equipment. Center section depth shall be 15", minimum.
  - c. Contractor shall size the height of the cabinet to house applicable equipment, terminals, wire and devices in a neat and workmanlike manner.
2. Indoor Enclosures: Refer to Security Terminal Cabinet (STC) configurations within Specification Section 28 13 00 Electronic Access Control System
  3. Outdoor Enclosures: Provide Hoffman DesignLine Type 3R or Type 4 Enclosure, or equivalent, with 10 Gage steel body and door, swing-out rack mount, and extension ring kits as required to house specified equipment. Provide tamper resistant key lock. Contractor shall size the cabinet to house applicable equipment, terminals, wire and devices in a neat and workmanlike manner.

### 2.3 [ACCESS CONTROL RACK AND CONSOLE MATERIALS]

- A. Equipment Racks: Contractor shall [reuse existing equipment] [provide] rack [design number] in the [location]. Provide the following to complete the work on the existing rack.
  1. Top Fan Panel: Provide top panel with exhaust fans, safety guard, cord and plug. Install a multi-fan top panel in each rack bay, with a sufficient number of low-noise fans to provide the required cooling.
  2. Pullout Work Surface: 3 ½" x 20" rack mountable work surface.
  3. Sliding shelves for computers and keyboards.
  4. Provide blank plates to cover unused front spaces.
  5. Coordinate console color, trim and finish with the Owner.
  6. Provide leveling feet, floor mounting kit, earthquake kit, rack connector kit, keyed locking hardware and miscellaneous hardware to provide a sealed and finished appearance.
  7. Refer to drawings for further details.
  8. Obtain approval of color and finishes with Owner prior to delivery.
  9. Console / Rack shall be by Winsted, Middle Atlantic or Owner approved equal

### 2.4 TEST EQUIPMENT

- A. The Contractor is responsible for providing test equipment required to test the system in accordance with the parameters specified. Unless otherwise stated, the test equipment shall not be considered part of the system and retain ownership of the equipment. The Contractor shall furnish test equipment of an accuracy better than the parameters to be tested.
- B. The test equipment list shall be furnished as a part of the submittal.
- C. Readiness: Keep test equipment at hand and maintain in calibrated condition at the jobsite as required for routine and performance testing of this work.

## PART 3 EXECUTION

### 3.1 GENERAL

- A. Perform this work in accordance with acknowledged industry and professional standards and practices, and the procedures specified herein.

- B. Aesthetics are an important consideration in this installation. Components shall be installed so as to have aesthetically pleasing results per Owner and Architect requirements. Actual locations of visible components shall be coordinated in advance with Owner and Architect.
- C. The Contractor shall insure that installation personnel understand the requirements of this Specification.

### 3.2 COORDINATION

#### A. General

1. This Contract involves functioning systems. Coordination with the Owner is critical. Do not interrupt any functioning system without complying with the requirements of "Notification" section of this specification.
  2. Coordinate the work with the Owner and all trades to assure that where this work interfaces to other trades, those interfaces are provided, complete and functional.
  3. Meet with a representative of the Owner and each trade. Identify devices needed to complete functional operation of this work which are being provided by Owner, General Contractor or another trade, and assure that the work being provided by others will be acceptable.
  4. Make sure work by others is scheduled in order that this work can be installed in a timely fashion.
  5. Verify dimensions, and work by others which may be necessary to facilitate the work and coordinate with other trades. Assure that related work by others is coordinated with this work.
  6. Verify field conditions. Regularly examine construction and the work of others which may affect the work to ensure proper conditions are provided for the equipment and devices before their manufacture, fabrication or installation. Be responsible for the proper fitting of the systems, equipment, materials, and devices provided as part of this work.
- B. Required Resources: Become familiar with the available access and space for equipment and any potential interference requiring coordination. Coordinate with the Owner to assure that adequate electrical and HVAC, services are available. Provide the physical space for equipment, and ample access room for installation and maintenance of equipment.
  - C. Positioning Members: Provide additional support or positioning members as required for the proper installation and operation of equipment, materials and devices provided as part of this work as approved by the Owner without additional expense.
  - D. Interface Devices: Provide items necessary to complete this work in conformance with the Contract Documents or the satisfaction of the Owner without any additional expense.
  - E. Equipment shall be mounted with sufficient clearance to meet applicable codes and facilitate observation and testing. Securely hang and/or fasten with appropriate fittings to ensure positive grounding, free of ground loops, throughout the entire system. Units shall be installed parallel and square to building lines.
  - F. Installation shall comply with "Codes and Standards" section of this specification. Where more than one code or regulation is applicable, the more stringent shall apply.
  - G. Where new equipment is replacing old equipment, Contractor is responsible for removing the old equipment and doing repair work necessary to meet standards determined by Owner.
  - H. Install fire stopping for penetrations in slabs and firewalls to meet code at the completion of work and prior to final testing demonstration to Owner.
  - I. Project Documentation: Review project documentation. If the Contractor perceives conflict or ambiguity in the contract documents, he shall seek interpretation from the Owner. Failure to do so may result in remedial work.

- J. Project Schedule: Immediately obtain and follow the project schedule established by the Owner. Failure to maintain the schedule may result in a requirement by the Owner to expend extra effort until the project schedule has been achieved.
- K. Schedule Changes: Time is of the essence of this agreement. In the event that it becomes necessary for the Contractor to expend "extra effort" to complete the work according to schedule changes not covered above, the Contractor agrees to cooperate with the Owner in good faith to complete the work according to schedule requirements.
- L. Supervision: Maintain a competent supervisor and supporting technical personnel acceptable to the Owner during the entire installation. A change of supervisor during the project shall not be acceptable without prior written approval from the Owner.
- M. Work and Manpower Rules: Comply with applicable jobsite work and manpower regulations.
- N. Found Conflicts: Continuously make known to the Owner, conflicts discovered which may affect the orderly completion or the specified performance of this work. Cooperate with the Owner and other trades to accommodate such changes as may be necessary to resolve found conflicts.
- O. Coordination Difficulties: Promptly notify the Owner in writing of any difficulties which may prevent proper coordination or timely completion of this work. Failure to do so shall constitute acceptance of construction as suitable, to receive this work, except for defects that may develop in the work of others after its execution.
- P. Environmental: Verify the intended location(s) for equipment is suitable for the equipment. If conditions such as temperature, humidity, dust level or the like require modification, make it known to the Owner immediately upon award of the contract. If equipment requires strict environmental conditions (dust limitations, etc.), notify the Owner immediately upon award of the Contract. Failure to notify the Owner of such conditions shall constitute acceptance of the conditions and any later required modifications to the equipment or the environment shall be at the sole cost of the Contractor.
- Q. Extra Effort: The Owner retains the right to require the Contractor to expend whatever extra effort as may be required, in event the Contractor fails to perform satisfactorily at any milestone date, unless such delay is approved in writing by the Owner, or it can be proved by the Contractor that such delay was caused by other contractors, or Owner's intransigence relating to Owner requested changes in the scope of work. Any costs pursuant to such extra effort will be borne solely by the Contractor. If Project Schedule delays are approved, provide the Owner with monthly revisions of the Project Schedule reflecting actual performance vs. the schedule.

### 3.3 SEISMIC PROTECTION

#### A. General

1. Seismic protection criteria: Electrical and mechanical machinery installations in any Seismic Risk Zone of the Uniform Building Code Seismic Risk Map shall be protected from earthquakes.
2. Protection criteria for these zones shall be a Horizontal force Factor not less than required by code or agency, considered passing through the machinery center of gravity in any horizontal direction.
3. Unless vibration isolation is required to protect machinery against unacceptable structure transmitted noise and/or vibration, machinery shall be protected from earthquakes by rigid structurally sound attachment to the load supporting structure. The number shall be determined by calculations performed by a registered California professional engineer, as verified by the seismic restraint vendor.
4. Use protected spring isolators, or separate seismic restraints, to protect vibration isolation machinery.

5. Seismic snubbers and protected spring isolators shall be seismic protection-rated along three principal axes, proven by independent laboratory testing or analysis, by an independent, licensed structural engineer.
- B. The Contractor shall be responsible for the design of his method for seismic restraint systems, and shall supply all seismic calculations and details to the Owner for review. The Contractor shall supply to the Owner's Representative details of the forces exerted by his restraints, anchorages, and other points of attachment.
- C. Electrical and mechanical equipment shall be installed in accordance with the following guidelines:
  1. SMACNA Publication: Guidelines for Seismic Restraints of Mechanical Systems
  2. California Code of Regulations (CCR), Title 24, Division 22.
  3. NUSIG – National Uniform Seismic Installation Guidelines
- D. Contractor shall submit shop drawings for the mounting of equipment, fixtures, cabinets, consoles, conduit and cable support racks. [where required]These drawings shall be prepared, stamped and signed by a Registered California Structural Engineer.

### 3.4 WORKMANSHIP

- A. The installation shall be performed in a professional and workmanlike manner.
- B. On a daily basis, clean up and deposit in appropriate containers debris from work performed under the appropriate Specification sections. Stack and organize parts, tools and equipment when not being used.
- C. Preparation, handling and installation shall be in accordance with the Manufacturer's written instructions and technical data appropriate to the product specified.
- D. Work shall conform to the National Electrical Contractor's Association "Standard of Installation" for general installation practice.
- E. At the conclusion of the installation, work areas, including panel boxes, shall be vacuumed and cleaned to remove debris and grease.

### 3.5 EQUIPMENT ENCLOSURES, RACK AND CONSOLE INSTALLATION

- A. Construction: Coordinate access openings and wire paths through the cabinets for all desk mounted devices.
- B. Compliance: Comply with powering, conduit entry and grounding practices as described herein and as required by code.
- C. Coordination of Access: Coordinate the installation of access covers, hinged panels or pull-out drawers to ensure complete access to terminals and interior components. Access shall be designed such that demounting or de-energizing of equipment is not required to gain access to any equipment.
- D. Enclosures: Fasten removable covers containing any wired component with a continuous hinge along one side with associated wiring secured and dressed to provide an adequate service loop. Appropriate stop locks shall be provided to hold all hinged panels and drawers in a serviceable position.
- E. Service Loop: Provide a wiring service loop allowing relocation of termination to any point within the enclosure.

### 3.6 CUTTING, PAINTING AND PATCHING

- A. Structural members shall not be drilled, bored or notched in such a manner that shall impair their structural value. Cutting of holes in structural members, if required, shall be done with

core drills and only with the specific approval of the Owner for each instance. Provide means to identify rebar in slabs prior to drilling.

- B. Walls and other architectural features that require cutting or repair during the installation process shall be returned to their original condition, including the matching of colors and finishes to the satisfaction of Owner, and at no additional cost to Owner.

### 3.7 GROUNDING PROCEDURES

- A. Provide grounding of systems and equipment in accordance with manufacturers recommendations, local electrical codes and industry standards.
- B. Signal Ground: Signal ground shall be derived from the one main electrical panel which serves all equipment herein.
- C. Grounding procedures for wire, equipment and devices shall be in strict accordance with manufacturers' recommendations and standard installation practices.
- D. Equipment enclosures of an assembly shall be grounded to the single grounding terminal strip of each assembly.
- E. Multiple Powered System Isolation: Where powered devices of the same system exist in two or more locations and a different signal ground exists in each location, the system's communication signal shall be isolated from signal ground at both source and destination ends via modem, fiber optics or other equivalent method.
- F. Contractor shall eliminate or correct potential ground-loop problems in a manner approved by the Engineer.
- G. Shielding: Shielded cables of this section shall be grounded exclusively to Signal Ground. No shields shall be permitted to carry live currents of any kind. Shields shall be tied to Signal Ground at the signal source end only, unless otherwise noted or required by the manufacturer.

### 3.8 CONDUIT AND WIRE INSTALLATION PRACTICES

- A. Conduit
  - 1. [Conduit shall be 3/4 inch minimum unless noted otherwise on the drawings]
  - 2. Wires shall be installed in conduit or in another Owner approved raceway for power and exposed wiring, in areas where mechanical or environmental conditions may damage conductors, and where otherwise specified herein or required by code.
  - 3. Conduit or raceway that is not hidden must have its location and appearance be specifically approved by Owner. If approved, exposed conduit or raceway shall be run in such a fashion as to make it as inconspicuous as possible. Runs should follow existing building lines and should be square wherever possible.
  - 4. Verify conduit has been installed, de-burred and properly joined, routed and terminated prior to pulling of cables.
  - 5. Apply a chemically inert conduit lubricant to wire and cable prior to pulling. Do not subject wire and cable to tension greater than recommended by the manufacturer.
  - 6. Secure wire and cable runs vertically in conduit for continuous distances greater than thirty (30) feet at the vertical run terminations. Non-coaxial cables shall be secured by screw-flange nylon cable ties or similar devices. Symmetrical clamping devices with split, circular or other wire conforming, non-metallic bushings shall be provided for other cables.
- B. Wiring Without Conduit
  - 1. Wiring may be run in concealed spaces without conduit, in electrical trays, and where otherwise shown on drawings, provided conductors are reasonably protected from mechanical and environmental damage.



2. Conductors run without conduit shall be approved, UL Listed, rated and labeled for Plenum use.
3. Secure wire and cable with approved supports in accordance with the referenced standards and the Authority Having Jurisdiction.
4. Provide cable supports at a minimum of 4-foot intervals.
5. Equipment and devices shall be installed on approved electrical backboxes. Do not install equipment and devices directly on walls, ceilings or structural components without backboxes.
6. Secure cables to cabinets, junction boxes, pull boxes and outlet boxes with approved cable clamps.
7. Independently support cables. Do not use other supports i.e., (suspended ceilings, suspended ceiling supporting members, lighting fixtures, mechanical piping, or mechanical ducts).
8. Support cable independently of junction boxes, pull boxes, fixtures, suspended ceiling T-bars, angle supports, and similar items.
9. Support cable using cable trays, D-brackets, support straps, support wires or other approved cable supports.
10. Fasten cable supports to building structure and surfaces.
11. In shared electrical trays, open ducts, and other cable runs without conduit, separate and strap Access Control cable so that it is clearly distinguishable from all other cables.
12. Clearly mark security system cables at minimum intervals of every 10-feet. Marking shall be with a permanent, printed label, color-coded tag, or other distinguishing marking. Felt tip pen marking on the cable is not acceptable.

C. Existing Wiring

1. Existing wiring or cabling which is to be reused, shall be disconnected, checked and tested to insure there are no breaks, grounds, opens, or shorts on any conductors or shields, and re-connected. In addition, existing wiring shall have insulation tested with a megohmmeter. A reading of greater than 20 megohms shall be required to successfully complete the test.
2. Verify splices and connections at every device, junction box, pull-box, and other transition point. If splices are found, verify and correct splice deficiencies as noted herein.
  - a. The wire shall be joined with solder, then taped or otherwise protected in an approved manner so as to provide mechanical and electrical integrity. Dolphin splice connectors are authorized at points where product is provided with wire leads. Wire nuts and/or electrical tape connections shall not be acceptable.
  - b. Water-resistant protection shall be provided for splices and connections in parking and roadway areas, on poles, surface conduit, in-slab pull-boxes, in-slab conduit, and underground conduit and pull-boxes.
    - 1) Splices/Junctions: Provide water-proof protection of splices and junctions, in surface conduit and boxes, on poles, in-slab conduit and pull-boxes, underground conduit, and underground pull-boxes, to prevent the entry of moisture or water into cables, splices or connections.
    - 2) Cable Entries: Provide water-blocking sealants at conduit entries into pull-boxes, junction boxes, back-boxes and cabinets to prevent the entry of moisture or water into the conduit and cable system.
3. Verify final connections and provide with complete tagging, labeling and documentation.

#### D. New Wiring

1. After installation, and before termination, wiring shall be checked and tested to insure there are no grounds, opens, or shorts on any conductors or shields. In addition, wiring between buildings or underground and all coax cables shall have insulation tested with a megohmmeter and a reading of greater than 20 megohms shall be required to successfully complete the test.
  2. Run wires continuously from termination to termination without splices. Splices at junction box locations may be allowed at the discretion of the Owner. Recommendations for splices at these points shall be established with Owner. Contractor shall obtain approval from the Owner before proceeding with splices.
  3. If splices are required and approved by Owner, the wire shall be joined with solder, then taped or otherwise protected in an approved manner so as to provide mechanical and electrical integrity. Wire nuts and/or electrical tape connections shall not be acceptable. Final connections shall be made at terminal boards with full tagging, labeling and documentation.
  4. Water-resistant protection shall be continuous throughout the cable in parking areas, surface conduit, poles, in-slab pull-boxes, in-slab conduit, and underground conduit and pull-boxes, and in any areas subject to moisture and/or water infiltration.
    - a. Splices/Junctions: Provide water-proof protection of splices and junctions, in surface conduit and boxes, in-slab conduit and pull-boxes, underground conduit, and underground pull-boxes, to prevent the entry of moisture or water into cables, splices or connections.
    - b. Cable Entries: Provide water-blocking sealants at all conduit entries into pull-boxes, junction boxes, back-boxes, cabinets, etc., to prevent the entry of moisture or water into the conduit and cable system.
- E. Boxes: Provide a box loop for wire and cable routed through pull boxes or controller panels. Cable loops and bends shall not be at a radius less than that recommended by the manufacturer. Coordinate pull box size with the Division 26 Contractor as necessary to accommodate this requirement.
- F. Wire Lacing and Dressing: Dress, lace, tie or harness wire and cable vertically, horizontally and at right angles to the enclosure surfaces to prevent mechanical stress on electrical connections as required herein and in accordance with accepted professional practice. No wire or cable shall be supported by a connection point.
- G. Non-Coaxial Connections: Make non-coaxial connections and approved splices within terminal cabinets (except microphone or line level) to screw-type barrier blocks with insulated crimp-type spade lugs. Size all lugs properly to assure high electrical integrity. Connect only one (1) wire per spade lug and not more than two (2) lugs per screw terminal.
- H. Non-Coaxial splicing at device locations to equipment with wire leads shall be made with pre-approved wire Dolphin Connectors.
- I. Shielded Cables: Shielded cables shall be insulated. Do not permit shields to contact conduit, raceway, boxes, terminal cabinets or equipment enclosures. Tin terminated shield drain wires and insulate with heat shrinkable tubing.
- J. Coaxial Splices: Coaxial splices, if required and approved, shall be on plate mounted dual-barrel type insulated BNC connectors, secured in such a manner that no stress is placed upon the connector.
- K. Unacceptable Conditions: Correct any unacceptable wiring conditions immediately upon discovery, and upon receiving notice to correct.

#### 3.9 DATABASE PREPARATION, CHECKING AND ACTIVATION

- A. Contractor to request Owner provided forms with completed nomenclature for each identified device no less than [15, 30, 45] days prior to programming.. It is essential that the above activities be clearly identified on the Project Schedule so database preparation is accomplished in sufficient time to permit orderly and on time system activation
- B. It shall be the responsibility of the Owner to insure the accuracy of the database information entered on forms by thoroughly checking completed data entry forms.
- C. It shall be the responsibility of Contractor to insure that database formatting is correct prior to entry into the system and system activation.
- D. Programming
  - 1. The Contractor shall be responsible for the initial database entry for devices and equipment installed in this project into the existing system prior to activation. Location of program database entry to be confirmed with the Owner. The database shall consist of hardware and function-related information, i.e., system configuration, doors, alarm points, software parameters for system management, graphical maps, intercom interfaces, alarm information – access levels, automatic opening and locking schedules. A printout of the final database shall be provided to the Owner for review and approval prior to system activation.
  - 2. Programming rights shall be provided by Career and Protective Services (CAPS) and the Department of Public Safety (DPS). Contractor shall coordinate with these services prior to the completion of installation to set a schedule for access to programming resources.
  - 3. Follow all procedures and protocols for programming the system, in accordance with CAPS/DPS instructions.
- E. System activation shall be the responsibility of Contractor. Once the system and database have been demonstrated to be functioning properly according to manufacturer's guidelines and the system design, further database entries and upgrades shall be the responsibility of Owner, unless otherwise noted.

### 3.10 SOFTWARE UPGRADES

- A. If more recent versions of the operating system or application software are made available to or requested by the Owner prior to system acceptance, these updated versions shall be installed and verified by Contractor.
- B. Before installing upgrade software, Contractor shall ensure that existing database information is properly "backed-up" prior to any installation action.

### 3.11 START-UP RESPONSIBILITY

- A. Contractor shall initiate System Operation. Competent start-up personnel shall be provided by Contractor on each consecutive working day until the System is functional and ready to start the acceptance test phase. If in Owner's judgment Contractor is not demonstrating progress in solving any technical problems, Contractor shall supply Manufacturer's factory technical representation and diagnostic equipment at no cost to Owner, until resolution of those defined problems. Where appropriate, Contractor will bring the System on-line in its basic state (i.e., alarm reporting, facility code access control, etc.).
- B. Properly ground each piece of electronic equipment prior to applying power.
- C. Properly ground all shielded wire shields to the appropriate earth ground at the hub end only, not at the remote or device end.
- D. 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.

### 3.12 PRELIMINARY, INSPECTION, ACCEPTANCE TESTING, AND COMMISSIONING

Provide Preliminary Testing, Inspection, Acceptance Testing, Burn-In and Commissioning Performance services for systems and equipment in accordance with Testing and Commissioning, Section 28 08 00.

### 3.13 FINAL PROCEDURES

- A. Portable Equipment: Furnish portable equipment specified herein to the Owner, along with complete documentation for the materials furnished. Portable equipment shall be presented in the original manufacturer's packing, complete with manufacturers instructions, manuals and documents. Testing of portable equipment shall have been previously conducted by the Contractor.
- B. Post Acceptance Work: Check, inspect and adjust systems, equipment, devices and components specified, programming updates, at the Owner's convenience, approximately sixty (60) days after Acceptance of the Installation.

### 3.14 NOTICE OF COMPLETION

When the performance and acceptance requirements described above, including the Final Acceptance Test, have been satisfactorily completed, the Owner shall issue a Letter of Completion to Contractor indicating the date of such completion. The Notice of Completion shall be recorded by Contractor upon receipt of the Owner completion letter. This date of record shall be the start of the warranty period.

END OF SECTION

**USC GUIDELINE SECURITY SPECIFICATIONS**  
**SECTION 28 05 53**  
**IDENTIFICATION FOR ELECTRONIC SAFETY AND SECURITY**

**PART 1 GENERAL**

**1.1 DESCRIPTION**

- A. This specification section covers the furnishing and installation of nameplates, labels, wire markers, and other identification components for security systems.
- B. Contractor shall furnish and install identification devices as specified on cables, cabinets, racks, and equipment.

**1.2 PRECEDENCE**

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.

**1.3 GENERAL CONDITIONS**

In accordance with Section 28 05 00, Security System General Requirements

**1.4 RELATED WORK**

- A. In accordance with Section 28 05 00, Security System General Requirements
- B. In accordance with Section 28 08 00, Security System Testing and Commissioning
- C. In accordance with Section 09 90 00, Paints and Coatings

**1.5 SHOP DRAWINGS & EQUIPMENT SUBMITTALS**

- A. In accordance with Section 28 05 00, Security System General Requirements
- B. Product Data:
  - 1. Submit manufacturer's catalog literature for each product required.
  - 2. Submit identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function.

**1.6 WARRANTY**

In accordance with Section 28 05 00, Security System General Requirements

**1.7 REQUIREMENTS FOR IDENTIFICATION AND TAGGING**

- A. Cables, wires, wiring forms, terminal blocks and terminals shall be identified by labels, tags or other permanent markings. The markings shall clearly indicate the function, source, or destination of all cabling, wiring and terminals. The wire marking format contained in the shop drawings shall be utilized for conductors installed under this Specification. Cables and wires shall be identified, utilizing heat-shrink, machine-printed, polyolefin wire markers (Hand written tags or marker on wiring is not acceptable.)
- B. Should a situation arise where the wire tagging format as shown on the shop drawings cannot be used, a substitute format shall be submitted which complies with the intent to provide documentation that will permit end-to-end tracing of all System wiring.
- C. Terminal points shall be appropriately identified and labeled as shown on shop drawings.

- D. Exterior Readers: Readers on the exterior of the building shall be provided with a plaque instructing users on how to get help with the device. Plaque shall meet the following standards.
1. Plaque shall be a 4" W x 2" H, cardinal colored plate, with gold lettering
  2. Plaque shall read:
    - a. Line 1: "For assistance with card reader"
    - b. Line 2: "please call DPS at"
    - c. Line 3: blank
    - d. Line 4: "213-740-6000"
    - e. Line 5: blank
    - f. Line 6: "Device Name: BLD\_DoorName" where BLD\_DoorName is the name the door is programmed as in the Lenel system.
  3. Include plaque details on shop drawing submittals for review and approval by the Owner prior to installation.
- E. Nameplates – General:
1. Provide laminated, engraved plastic nameplates with 3/8 inch high letters for all panels, enclosures and cabinets. Attach nameplates to gear with sheet metal screws where applicable. Adhesive mounted nameplates are generally not acceptable.
  2. Include nameplate schedule on shop drawing submittals.
  3. Install nameplates behind panel door in public areas and on panel face in equipment rooms.
  4. Nameplate Color Schedule:
    - a. Fed from Normal Building Power: Black letter on White label
    - b. Fed from Emergency/ Generator Power: White letters on Red label
- F. Panels shall be provided with permanently attached engraved lamacoid labels, as described in Item E, with identifying names and functions. Labels shall be consistent in form, color, and typeface throughout the system and must contain the name of the system or subsystem as part of the label textual information. Hand written tags or marker type identification is not acceptable.
- G. Equipment/Equipment Racks: Provide an engraved lamacoid label, as described in Item E, on the front of equipment including its designation as assigned and referenced consistently throughout this project.
- H. Enclosures and Cabinets:
1. Provide an engraved lamacoid label, as described in Item E, on the front of wall mounted control enclosures and equipment racks including its designation as assigned and referenced consistently throughout this project.
  2. Within each equipment enclosure and/or terminal cabinet, the contractor shall place a Single Line drawing of the system(s) and the respective Equipment/Terminal Cabinet Wiring Diagram in a clear plastic 8" x 11" sleeve permanently attached to the inside cover of the terminal cabinet. Drawings shall include cable and equipment label designations to match the labeling within the cabinet.
  3. In each equipment enclosure the contractor shall place an as-built drawing depicting device locations served by the equipment within the enclosure, with identification that is identical to the wiring tags and with the software description of each point.

4. In each equipment enclosure the contractor shall place a copy of the USC Lenel System Excel Spreadsheet or equal document depicting device names, MAC addresses and IP addresses as indicated in the Lenel system.
- I. Door Openings: For all doors controlled by the Lenel system, provide a P-touch label with the door name (as named in the Lenel program) on the top of the door edge on the hinge side. P-touch label shall be black lettering on white ¼" tape. Coordinate with Owner for exact location.
- J. Lenel Panel Relays: All relays on Lenel panel boards shall be labeled with P-touch label ¼" tape, black lettering on a white label, identifying the USC door number associated with the relay. Architectural door numbers are not acceptable for these labels.
- K. Panic Bar: All panic bars shall be labeled on the inside of the hardware with P-touch label ¼" tape, black lettering on a white label, identifying the location of the power supply feeding the door including room name and room number.
- L. Wire and Cable: Identify wire and cable clearly with permanent labels wrapped around the full circumference within one-inch of each connection. Correlate the number designated on the associated Shop or Field Drawings. Assign wire or cable designations consistently throughout a given system. Each wire or cable shall carry the same labeled designation over its entire run, regardless of intermediate terminations.
- M. Wireless Locking Systems
  1. PIMs shall be labeled on the front cover with the following information
    - a. PIM Unique ID (found with HHD under properties)
    - b. Linked Door numbers and corresponding PIM channel/RS485 address (As well as Lenel corresponding identifier if different)
  2. Map of all PIM and AD400 locations shall be provided to the Owner as part of close-out documents with table identifying which locks are linked with which PIMs

## **PART 2 PRODUCTS**

### **2.1 GENERAL**

- A. Product Acceptability: The Products section contains lists of acceptable products. If product substitutions are proposed, they must be made based upon a comparison of equivalence to the product specified and compatible with the existing USC system. Considerations may include but shall not be limited to functional, physical, aesthetic and/or interface aspects. The Owner shall be the sole judge of whether or not a submitted substitution is deemed to be "equivalent" to that specified. Contractor may not use contractor proprietary interface modules for connections between field devices and controller
- B. Labeling:
  1. Provide intelligible permanent engraved identification function on or adjacent to panel assemblies, power supplies, and cabinets.
  2. Provide intelligible permanent label-maker labels for relays, controls, fuses and/or circuit breakers, patching jacks, connectors, receptacles, terminal blocks, indicators, switches, monitors, and servers.
  3. Labels shall be machine-printed. Hand-lettered labels shall not be acceptable.
- C. Engraving, labels, decals or other identification on any device, equipment or miscellaneous component shall be coordinated with the associated Field and Shop and Equipment Wiring Drawings.

- D. No proprietary identification on assemblies will be permitted other than the original manufacturers labels and identification.

## 2.2 MISCELLANEOUS PRODUCTS

- A. Wire and Cable Labels: Provide Brady Type B-321, dot matrix and thermal transfer printable sleeves, with permanent ink ribbon printing, or Thomas and Betts EZ-W/YHS, or equal. Sleeves shall be constructed of heat shrinkable, high density polyolefin film coated and shall have an ink-receptive top-coating. Labels shall be pre-printed to match the designations shown on the shop drawings, fitted to cables in the field, and heat shrunk to secure their position. Labels should be placed such that they are easily accessed and readable after the device or panel is fully dressed.
- B. Equipment Labeling: Unless otherwise noted herein, provide Laminated three-layer plastic with engraved black letters on white background color. Minimum thickness shall be 1/8". Letter size shall be 3/8"-1/2" for equipment and controls.
- C. Cabinet/Enclosure Labeling: Unless otherwise noted herein, provide Laminated three-layer plastic with engraved black letters on white background color. Minimum thickness shall be 1/8". Letter size shall be 1/2" minimum.

## PART 3 EXECUTION

### 3.1 GENERAL

In accordance with Section 28 05 00, Security System General Requirements.

### 3.2 LABEL AND NAMEPLATE INSTALLATION PRACTICES

- A. Degrease and clean surfaces to receive adhesive for identification materials.
- B. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.
- C. Install identifying devices after completion of painting and finishes.
- D. Nameplate Installation:
  - 1. Install nameplate parallel to equipment lines.
  - 2. Install nameplate for each control equipment enclosure with corrosive-resistant mechanical fasteners.
  - 3. Install nameplates for each control panel and major control components located outside panel with corrosive-resistant mechanical fasteners.
  - 4. Secure nameplate to equipment front using screws.
- E. Wire Marker Installation:
  - 1. Install wire marker for each conductor at each connection.
  - 2. Mark data cabling at each end. Install additional marking at accessible locations along the cable run.
  - 3. Install labels at data outlets identifying patch panel and port.

### 3.3 PRELIMINARY INSPECTION AND TESTING

Provide preliminary inspection and testing services for systems and equipment in accordance with Testing and Commissioning, Section 28 08 00.

### 3.4 FINAL PROCEDURES

Perform final procedures in accordance with section 28 05 00, Security System General Requirements.



END OF SECTION

## USC GUIDELINE SECURITY SPECIFICATIONS

### SECTION 28 07 00

#### SECURITY SYSTEM INTEGRATION

##### PART 1 GENERAL

###### 1.1 DESCRIPTION

- A. General Description: This specification section covers the provision of mechanisms which will support the exchange and recognition of information and commands between various Access Control systems at the University of Southern California.
- B. Contractor shall coordinate with providers of systems listed herein to provide equipment, software, and configuration that will support the required functionality and performance.

###### 1.2 QUALIFICATIONS

Provide the work in accordance with Section 28 05 00, Security System General Requirements.

###### 1.3 GENERAL CONDITIONS

Provide the work in accordance with Section 28 05 00, Security System General Requirements.

###### 1.4 RELATED WORK

Provide the work in accordance with Section 28 05 00, Security System General Requirements.

###### 1.5 SHOP DRAWINGS & EQUIPMENT SUBMITTAL

- A. Provide the work in accordance with Section 28 05 00, Security System General Requirements.
- B. In addition to the requirements of Section 28 05 00, provide the following information for each system to be integrated:
  - 1. Describe the integration architecture between systems. Provide a single-line diagram showing relationships between integrated components.
  - 2. If a central integration processing component or user-interface (server, application) is proposed, describe the hardware and application software proposed.
  - 3. A detailed description of how the interface will be accomplished between each system, including proposed connectivity, hardware, software, language, protocols, procedures, and standards.
  - 4. Proposed Software Development Kit (SDK) and Version, where an SDK already exists from the component manufacturer. Provide development and capabilities information on the SDK and its proposed use on this project.
  - 5. Development specification for custom software development, where the interface must be created specifically for the project.
  - 6. A detailed list, or matrix, of information, commands, and other elements of the interface, delineating exactly what functions will be supported between each system, and how they will work.

###### 1.6 OPERATIONS AND MAINTENANCE MANUALS

Provide the work in accordance with Section 28 05 00, Access Control General Requirements.

###### 1.7 WARRANTY

Provide the work in accordance with Section 28 05 00, Access Control General Requirements.

## 1.8 SERVICE AND MAINTENANCE

Provide the work in accordance with Section 28 05 00, Access Control General Requirements.

## 1.9 TRAINING

Provide the work in accordance with Section 28 05 00, Access Control General Requirements.

## 1.10 EQUIPMENT COMPATIBILITY REQUIREMENTS

Provide the work in accordance with Section 28 05 00, Access Control General Requirements.

## 1.11 OWNER'S RIGHT TO USE EQUIPMENT

Provide the work in accordance with Section 28 05 00, Access Control General Requirements.

## 1.12 TECHNICAL REQUIREMENTS, ACCESS CONTROL SYSTEM INTEGRATION

### A. General

1. The Contractor shall be responsible for providing hardware and software interfaces to achieve the specified system performance described herein and, by reference, realize absolute and seamless compatibility with the related component systems.
2. The Contractor shall ensure system additions and modifications provided under this scope of work have no negative effect on the individual components and systems, and their core functionality, and no permanent effect beyond that specified or implied by the scope of work.

### B. Purpose

1. Integration is the process of designing, deploying, and configuring independently operating systems with the ability to request, receive, extract, process, and act upon information from other systems.
2. Successful system integration must address three fundamental issues:
  - a. **Functionality:** What information is needed, how it is to be requested and processed, and what functions or activities need to occur upon receipt of the information.
  - b. **Connectivity:** How systems will be connected together to support the communication of information and commands. (Special interfaces, wiring, networks, databases.)
  - c. **Communication:** How information will be communicated between systems. (Instruction sets, language, protocols, formats, priority.)

### C. Environment

1. Integration components shall generally comprise special elements of independent subsystems, and shall be located within, or in close proximity to, the processing components of each independent subsystem. Where subsystems require special hardware or communications interfaces to support integration, the special hardware should be located near the independent subsystem processing components or network appliance, based on the manufacturers' recommendation. See the drawings for details on mounting locations.
2. **Central Administrative Post:** Components of the main integration system operating shell may be distributed throughout the site / facility, in relation to the other integrated subsystems. The main EACS system monitoring is located in the University Campus Access Control Command Center in Parking Structure 'A'. System programming, rules configuration and control shall occur at a location designated by the Owner.
3. **Infrastructure and Connectivity**
  - a. **Devices/Appliances:** Appliances and devices shall be connected to their respective systems via the applicable communications network.

- b. System LAN/WAN Connectivity: System Servers and microprocessor-based Control Panels, shall reside on the Local Area Network (LAN) or Wide Area Network (WAN) tier designated for integrated components.
- c. Enterprise: LAN networks will be connected to the University's Wide Area Network, to establish connectivity between sites and the PSA Command Center.

D. Attributes

- 1. The attributes of the integrated environment are primarily defined by the subsystems that are to be integrated. Verify existing system components to be expanded by this project.
- 2. Integrated systems comprise the processors, software, electrical control panels, data gathering panels, special data interfaces, and converters required to allow systems to communicate with each other, process information, and allow users to program and perform operations.
- 3. The following systems will be a part of the integrated environment:
  - a. Electronic Access Control System (EACS)
  - b. Security Intercom System (SIS)
  - c. Emergency Phone System (EPS)
  - d. Video Surveillance System (VSS)

E. Functions

- 1. The system shall provide the following automated processing rules, at a minimum:
  - a. The object of "Access Control system integration" is to automatically configure the system to display, record, and report appropriate system activity to various elements of the system. Automatic configuration can free operators from difficult control tasks, give the operator more time to respond to events, reduce operator error, and insure critical system tasks occur consistently.
  - b. Access Control system elements (EACS/VSS/EPS) shall be electronically integrated in such a way as to enable video, video detection, database records and/or event-initiated instructions to be communicated between system components, to initiate recording, display, communication, and control activities.
  - c. Event-Initiated Interface, General:
    - 1) The system shall support the capability to send and receive alarm and control messages between the EACS and VSS systems via a LAN communications link, using API, XML, or other industry-standard communication languages and formats, and shall act upon those messages received.
    - 2) Where integration may require the implementation of RS-232 interfaces, Contractor shall propose such integration to the Owner for approval, before proceeding with the work.
    - 3) All software routines required to accomplish the required data-interface with external equipment and controls will be fully developed, installed, tested and supported by the Contractor.
    - 4) The manufacturer of each applicable system will also support the data-interface, and will be engaged by the Contractor to provide on-site technical assistance where required to prepare, repair, configure, and test the system to operational condition.
    - 5) Communication of event information between systems shall take place automatically and immediately, when the event is sensed by the system.

- 6) "Hard-wired" interfaces used to support interactive video surveillance cameras, intelligent video, threat-based control, and other event-initiated functions shall not be acceptable, except as otherwise noted herein or shown on the design drawings.
- d. Intercom / Emergency Phone Integration
    - 1) Upon activation of the pushbutton the system shall record an event in the
      - a) EACS for date and time
      - b) Activate a [indicate if existing site camera is to be called up] video camera where required by the owner
      - c) Start the process for voice communication with responding department
    - 2) Hardwire interface between Intercom / Emergency Phone systems and EACS is acceptable.
  - e. VSS Event-Initiated Control
    - 1) Upon receiving event/alarm information from the EACS, the VSS system shall transmit camera pre-positioning commands to applicable pan/tilt/zoom cameras, and shall cause the system to process, display, and record applicable cameras.
    - 2) The system shall automatically position and focus one or more cameras, or sequence of cameras, on nearby alarm locations. Coordinate with the Owner on initial and alarm preset camera views and programming.
    - 3) Configure systems to automatically send camera positioning and display commands from the EACS systems to the VSS Virtual Switching and Recording Software, based upon EACS event data. The system shall
      - a) Automatically select, position, and focus one or more cameras on areas of concern;
      - b) Automatically re-configure recording for the selected cameras, to record them in an enhanced format, at the highest available resolution, frame rate, and quality (all other cameras remain at their pre-programmed format);
      - c) Automatically display the selected cameras on one or more monitors, client workstations, and other display devices, in a pre-selected configuration (single or multi-camera views).
  - f. This interface shall be implemented using the integration scheme described herein.
  - g. Recorder/Camera Control: Configure the EACS to allow control of the VSS system. At a minimum, the EACS should support the following VSS system functionality:
    - 1) Link alarms or events to a camera, with programmable pre-and post-alarm recording sequences.
    - 2) Fast-forward, rewind, pause, and print, pre-recorded video.
    - 3) View recorded video "tagged" or associated with EACS alarms or events.
    - 4) Access a Windows-style Tree view of connected cameras.
    - 5) Select camera icon from map to view live video.
    - 6) View a single live video feed in full-screen.
    - 7) View up to 4 simultaneous camera views in quad-view format.

- 8) Receive and display digital video recorder generated alarms such as video loss and motion detection.
- 9) Trigger conditional commands on digital video recorder generated alarms.
- 10) Send video matrix commands via selected camera icon.
- 11) View recorded video from History Activity report, and/or Alarm Monitor window.
- 12) Identify alarms and events that have associated video available for review.
- 13) Full video playback available at all EACS clients.
- 14) View associated video from the Alarm Monitor window, based on reported alarms.
- 15) Provide both manual and preset pan-tilt-zoom control.

## **PART 2 PRODUCTS**

Not used. Refer to individual equipment sections for specified systems.

## **PART 3 EXECUTION**

### **3.1 GENERAL**

Provide the work in accordance with Section 28 05 00, Access Control General Requirements.

### **3.2 COORDINATION**

Provide the work in accordance with Section 28 05 00, Access Control General Requirements.

### **3.3 WORKMANSHIP**

Provide the work in accordance with Section 28 05 00, Access Control General Requirements.

### **3.4 EQUIPMENT, RACK AND CONSOLE INSTALLATION**

Provide equipment, rack, and console installation in accordance with Section 28 05 00, Access Control General Requirements.

### **3.5 GROUNDING PROCEDURES**

Provide grounding of all systems and equipment in accordance with Section 28 05 00, Access Control General Requirements.

### **3.6 CONDUIT AND WIRE INSTALLATION PRACTICES**

Provide conduit, wire and cable installation in accordance with Section 28 05 00, Access Control General Requirements.

### **3.7 IDENTIFICATION AND TAGGING**

Provide identification of wire, panels, and devices in accordance with Section 28 05 00, Access Control General Requirements.

### **3.8 DATABASE PREPARATION, CHECKING, AND ACTIVATION**

- A. Provide database preparation, checking and activation for systems and equipment in accordance with Access Control General Requirements, Section 28 05 00.
- B. Contractor shall coordinate with the Owner to determine the required pre-programmed surveillance, rule-setting, and event-initiated configurations

### **3.9 START-UP RESPONSIBILITY**

Provide start-up services for systems and equipment in accordance with Access Control General Requirements, Section 28 05 00.

### 3.10 PRELIMINARY INSPECTION AND TESTING

Provide preliminary inspection and testing services for systems and equipment in accordance with Testing and Commissioning, Section 28 08 00.

### 3.11 SYSTEM PERFORMANCE TESTING AND ADJUSTING PROCEDURES

A. Provide performance testing, burn-in, and adjusting of systems and equipment in accordance with Section 28 08 00, Testing and Commissioning.

B. Performance Testing

1. Demonstrate the operation of each camera that is associated with EACS monitoring or card reader points.
2. Demonstrate automated call-up, pre-positioning and graphical map control of each camera, from the EACS GUI screens.

### 3.12 BURN-IN PERFORMANCE PERIOD

Provide a burn-in performance period to demonstrate the stability of the system, in accordance with Testing and Commissioning, Section 28 08 00.

### 3.13 COMMISSIONING AND VALIDATION

Provide commissioning and validation services to prove and improve the effectiveness of the system, in accordance with Testing and Commissioning, Section 28 08 00.

### 3.14 FINAL PROCEDURES

Perform final procedures in accordance with Section 28 05 00, Access Control General Requirements.

END OF SECTION

## USC GUIDELINE SECURITY SPECIFICATIONS

### SECTION 28 08 00

#### SECURITY TESTING AND COMMISSIONING

##### PART 1 GENERAL

###### 1.1 WORK INCLUDES

- A. General Description: This specification section covers the provision of preliminary testing, acceptance testing, burn-in performance testing, and the commissioning of various access control systems at the University of Southern California [University Park Campus][Health Sciences Campus].
- B. Provide Testing to assure that electrical equipment and wiring is operational, within industry and manufacturers tolerances and is installed in accordance with other sections of these specifications.
- C. Conduct tests in the presence of the Owner and the Owner's agents for the purpose of demonstrating the equipment or systems' compliance with specifications. Demonstrate electrical and mechanical tests to the Owner and the Owner's agents that the entire installation is functioning properly and that circuits, including power, control, instrumentation, relaying, integration and communication, will function properly and as specified.
- D. Furnish, install and maintain tools, instruments, material, test equipment, test connections and power. Furnish personnel including supervision and "stand-by" labor required for the testing, setting, and adjusting of electrical facilities and component parts including putting the above into operation.
- E. Make tests with proper regard for the protection of equipment and personnel.
- F. Protect equipment from subsequent testing of other equipment and systems after equipment has been tested, checked for operation, and accepted by the Owner.
- G. Record test values of equipment, giving both "as-found" and "as-left" for existing conditions.
- H. The witnessing of any test by the Owner does not relieve the Contractor of warranties for material, equipment, and workmanship, as specified in the General Conditions.
- I. Check circuits for conformance with the wiring diagrams furnished by manufacturers.

###### 1.2 RELATED SECTIONS AND REFERENCES

- A. In accordance with Project General Requirements and General Provisions [insert provision by Architect or Owner].
- B. In accordance with Section 28 05 00, Security System General Requirements
- C. In accordance with Section 28 05 53, Identification for Electronic Safety and Security
- D. In accordance with Section 28 07 00, Security System Integration
- E. In accordance with Section 28 08 00, Security System Testing and Commissioning
- F. In accordance with Section 28 16 00, Electronic Intrusion Detection System
- G. In accordance with Section 28 16 05, Duress Monitoring System
- H. In accordance with Section 28 23 00, Video Surveillance System
- I. In accordance with Section 27 32 26, Emergency Phone System.
- J. Inspections and tests shall be performed in accordance with applicable codes and standards including the most current versions of NEC, ANSI, IEEE, NFPA, NEMA and OSHA.



- K. International Electrical Testing Association, Acceptance Testing Specifications (NETA ATS), latest edition.

### 1.3 SUBMITTALS

- A. In addition to the requirements of Section 28 05 00, four (4) bound copies of the certified test reports shall be submitted to the Owner within seven (7) days after the completion of the work. The final report shall be signed and include the following information:
  - 1. Summary of the project.
  - 2. Description of the equipment tested.
  - 3. Visual inspection report
  - 4. Description of the tests
  - 5. Pre-Acceptance and Final Acceptance Test results
  - 6. Conclusions and recommendations
  - 7. Appendix including appropriate test forms
  - 8. Identification of the test equipment used

### 1.4 WARRANTY

Provide the work in accordance with Section 28 05 00, Security Systems General Requirements.

## **PART 2 PRODUCTS**

Not used

## **PART 3 EXECUTION**

### 3.1 GENERAL

- A. Furnish labor, instruments, products, temporary power, and sufficient materials required for testing at each test.
- B. Correct deficiencies found as a result of tests and make replacements or repairs to tested products that are damaged as the result of the tests. This included Burn In Performance report reviews
- C. Schedule tests at a time convenient to witnesses thereto or persons affected by the tests.
- D. Provide fourteen (14) day written notification to the Owner for test procedures prior to the test.
- E. Make records of all tests in a neat and legible form. Identify the equipment or system tested and the test data.
- F. Check control, instrumentation, and power cables and conductors for proper connections, workmanship and identification.
- G. Test disconnect switches through an open and closed cycle for proper operation, alignment and contact.
- H. Additional tests required shall be as outlined under the various Sections of Division 26 and 28.
- I. Submit to the Owner certified reports on all tests indicating full compliance with test requirements.

### 3.2 COORDINATION

Provide the work in accordance with Section 28 05 00, Security System General Requirements.

### 3.3 WORKMANSHIP

Provide the work in accordance with Section 28 05 00, Security System General Requirements.

### 3.4 PRELIMINARY INSPECTION & TESTING

- A. Coordination: Coordinate testing of components of the system in cooperation with other trades.
- B. Verification: Prior to performing Preliminary Testing, inspection, and/or final testing procedures, Contractor shall insure the following:
  - 1. Safe and proper operation of all components, devices or equipment, and the absence of extraneous or interfering signals
  - 2. Proper grounding of devices and equipment
  - 3. Integrity of signal and electrical system ground connections
  - 4. Proper powering of devices and equipment
  - 5. Integrity of all insulation, shield terminations and connections
  - 6. Integrity of soldered connections and absence of solder splatter, solder bridges, debris of any kind
  - 7. Proper dressing of wire and cable with labels matching as-build documents
  - 8. "Wire-checking" of all circuitry, including phase and continuity
  - 9. Preliminary targeting and setup of video camera assemblies
  - 10. Mechanical integrity of all support and positioning provisions, i.e.: as provided for video cameras, monitors and any other equipment
  - 11. Sequencing: If applicable, determine and record the sequence of energizing systems to minimize the risk of damage from improper startup
  - 12. Proper operation of devices and systems in accordance with specified performance requirements
  - 13. System is programmed for alarm reporting of each device and associated with the graphical maps
  - 14. Verify system programming is defined.
  - 15. Verify with Owner the provided designations for all devices.
- C. Perform a Preliminary Inspection and Test to determine the operating status of components and systems prior to Final Acceptance Testing.
  - 1. Testing Security Equipment, Enclosures, and Cabinets
    - a. Test each equipment enclosure for tamper alarm
    - b. Test each power supply battery for power loss alarm reporting
    - c. Test 120VAC power loss alarm
    - d. Test for communication loss with server reporting
  - 2. Test power stand-by provisions (UPS, battery backup, generator backup)
  - 3. Testing Electronic Access Control Doors
    - a. Doors with Door Position Switch (DPS) and Request to Exit device (REX) shall be tested for:
      - 1) Door Forced Open alarm is generated when door is opened from unsecured side

- 2) Door Held Open alarm is generated when door is held open past its preprogrammed duration after valid REX event
  - 3) REX shunts alarm on egress
  - 4) REX does not shunt forced door alarm
- b. Doors with Electrified Exit Device, DPS and REX
- 1) Door is locked in secure mode
  - 2) Door is unlocked by manual command from system workstation
  - 3) Door is unlocked by time zone
  - 4) Door Forced Open alarm is generated during secure mode only
  - 5) Door Held Open alarm is generated during secure mode only
  - 6) REX shunts alarm on egress during secure mode, for the preprogrammed duration
  - 7) Door relocks immediately when door closes after valid passage (does not wait for preprogrammed duration)
  - 8) REX does not unlock door
  - 9) REX does not bypass forced door alarm
  - 10) Door relocks on time zone
  - 11) Door relocks during day mode on manual command from system workstation
- c. Doors with Automatic door operators
- 1) Door is locked in secure mode
  - 2) Door is unlocked by manual command from system workstation during secure mode
  - 3) Door is unlocked by time zone
  - 4) Door Forced Open alarm is generated during secure mode only
  - 5) Door Held Open to long alarm is generated during secure mode only
  - 6) REX shunts alarm on egress during secure mode
  - 7) REX does not unlock door
  - 8) Door relocks on time zone
  - 9) Door relocks during day mode on manual command from system workstation.
- d. Doors or Gates with card reader
- 1) Door unlocks by use of the card reader for programmed unlock time and does not alarm when door is opened
  - 2) Door is locked in secure mode
  - 3) Door is unlocked by manual command from system workstation
  - 4) Door is unlocked by time zone
  - 5) Door Forced Open alarm is generated during secure mode
  - 6) Door Held Open alarm is generated during secure mode
  - 7) REX shunts alarm on egress during secure mode

- 8) Door relocks immediately when door closes after valid passage (does not wait for preprogrammed duration)
  - 9) REX for door does not unlock door
  - 10) REX for gates does not unlock gate
  - 11) Door relocks on time zone
  - 12) Door relocks during day mode on manual command from system workstation
4. Testing Video Surveillance System
    - a. Live viewing
      - 1) Verify each camera live viewing at the monitoring workstation is in focus
      - 2) Verify each camera live viewing at Central Command Post is in focus
      - 3) During an alarm event verify camera and pre-programmed views associated with alarm event are displayed at the viewing location(s)
      - 4) Verify camera identification match Owner defined description.
    - b. Recorded Images
      - 1) Verify each camera viewing of recorded images at the monitoring workstation
      - 2) Verify each camera viewing of recorded images at Central Command Post
      - 3) Verify alarm event is recorded as specified in 28 23 00
  5. Testing Emergency Phone System
    - a. Local Device
      - 1) Verify indicator is 'on' solid
      - 2) Verify indicator 'flashes' when operated
      - 3) Verify audio communication with monitoring station
    - b. Remote monitoring
      - 1) Verify audio communication with remote station
      - 2) Verify alarm generated on EACS system
      - 3) Verify Video Surveillance System is activated 'calling' camera(s) to view location.
  6. Duress Switch – Intrusion Detection System
    - a. Verify switch activation reports to IDS control panel
    - b. Verify switch activation reports to monitoring station
  7. Security Communications Local Intercom System
    - a. Verify each switch remote station reports to the monitoring station and resets when restored
    - b. Verify each remote station reports as Owner defined room number
    - c. Verify audio is free from static and is has sufficient volume for communication.
  8. Wireless Alarm System
    - a. Verify wireless transmitters are activated by their associated alarm devices.

- b. Verify transmitted alarms report their individual ID's to their associated alarm receivers from various locations around the area of coverage.
  - c. Verify each wireless transmitter supervision reports its individual identification to the system .
- D. Adjustments and Documentation: After successfully energizing and testing the systems, make adjustments and document the setting of controls, configurations, as applicable. Tabulate all data along with an inventory of test equipment, a description of testing conditions and a list of test personnel.
- E. Test Documentation: Create and provide complete test reports documenting the results of the each performed on each device, control panel, power supply, and other elements of the system. Copies of preliminary test data shall accompany copies of performance testing data as part of the Operating and Maintenance submittal.

### 3.5 PREPARATION FOR ACCEPTANCE (PRIOR TO FINAL INSPECTION)

- A. Temporary facilities and utilities shall be properly disconnected, removed, and disposed of off-site.
- B. Systems, equipment, and devices shall be in full and proper adjustment and operation, and properly labeled and identified.
- C. Materials shall be neat, clean and unmarred, and parts securely attached.
- D. Broken work, including glass, raised flooring and supports, ceiling tiles and supports, walls, doors, etc., shall be replaced or properly repaired, and debris cleaned up and appropriately discarded.
- E. Extra materials as specified shall be delivered and stored at the premises as directed by the Owner at the completion of the [first building/phase].
- F. Preliminary Test reports of each system and each system component, and Record project documents shall be complete and available for inspection and delivery upon completion of each [building/phase] as directed by Owner.

### 3.6 ACCEPTANCE TESTING AND ADJUSTING PROCEDURES

- A. Purpose: Conduct testing and adjusting procedures to realize and verify the performance criteria specified herein and identified in Preliminary Testing procedures listed above. Successfully demonstrate the acceptable performance of each specified system in the presence of the Owner and Engineer.
- B. Scope: Conduct all performance testing, adjustment and documentation procedures to verify and realize compliance with the performance specifications herein. Make available at least one (1) engineer familiar with this work, and all required test equipment for the duration of performance testing verification, at the convenience of the Owner.
- C. Acceptance Testing Readiness: Acceptance testing will be performed after the system is installed and pre-tested completely.
  - 1. The contractor shall have successfully tested the system prior to scheduling formal acceptance testing and provided forms with each test for each portal. Contractor shall correct any and all deficiencies found at that time.
  - 2. Acceptance testing will be conducted in accordance with the approved Acceptance Testing Plan with a minimum of testing listed in Preliminary Testing section.
  - 3. Deliver equipment, devices and materials required for the access control work to the site at least fourteen (14) working days prior to the scheduled Completion Date.
  - 4. Install, test and ready all of the access control work for final Acceptance Testing of the Installation ten (10) working days prior to the Completion Date.

- D. Acceptance Testing Schedule: Contractor shall confirm in writing to the Owner when the system is ready for acceptance testing. Contractor shall then schedule a complete Acceptance Test at the convenience of the Owner.
- E. Acceptance Testing
  - 1. Contractor shall test and verify the performance of all equipment, systems, interfaces and peripheral equipment in the presence of the Owner, Owner Representatives, and Engineer.
  - 2. Tests shall be performed in accordance with the requirements of individual systems as specified herein and in related specification sections. Test shall incorporate testing described in preliminary inspection and testing.
  - 3. Contractor shall furnish communication equipment between the field testing team and the monitoring team.
  - 4. Contractor shall furnish testing forms for each location.
- F. An Observation Report will be generated by the reviewing team, Owner representative, Design Engineer and Contractor for contractor to review
- G. Correction of Jobsite Observation Report Items: Perform any and all remedial work to correct inadequate performance or unacceptable conditions of, or relating to any of this work, as determined by the Owner within ten (10) working days of the completion date. Corrective work shall be performed at no additional cost to the Owner. Contractor shall provide a written report each week of repairs made and plan to complete repairs in progress.
- H. Test Documentation: Document all acceptance testing, calibration and correction procedures described herein with the following information:
  - 1. Performance date of the procedure
  - 2. The names of personnel conducting the procedure
  - 3. The equipment used to conduct the procedure
  - 4. Type of procedure and description
  - 5. Condition during performance of procedure
  - 6. Parameters measured and their values, including values measured prior to calibration or correction as applicable

### 3.7 BURN-IN PERFORMANCE PERIOD

- A. Prior to Final Acceptance by the Owner, the Contractor shall be responsible for performing testing and inspections, as specified herein, to verify that the installation equipment and materials are performing in compliance with the specifications.
- B. Upon satisfactory completion of Acceptance Testing and inspection, the Owner shall notify the Contractor, and the Burn-In Performance Period shall commence.
- C. Contractor shall obtain weekly reports of alarm events related to this project and make system repairs or corrections to minimize false alarms. A report shall be provided by the Contractor to the Owner indicating corrections required and locations corrected. Engineer may provide additional comments to the report for contractor to review and provide corrective action.
- D. A Performance Period of thirty (30) consecutive calendar days of operating without fault in accordance with the specifications, subsequent to testing and inspection, shall constitute a successful Performance Period.
- E. Upon successful completion of the Performance Period, the Owner and design team shall meet to confirm Acceptance, and the Final Acceptance Form shall be executed.

- F. If a successful Performance Period cannot be accomplished within ninety (90) consecutive calendar days after commencement of the first Performance Period, the Owner reserves the right to find the Contractor in default, and terminate the Contract. In that event, the Contractor shall remove the equipment, and the Owner shall not be responsible for any payment whatsoever to the Contractor, except for any materials (i.e., wiring) left in place and elected to be reused by the Owner.
- G. Obtain system alarm and event reports at a minimum of four (4) times during the burn in period. Review reports with Owner and repair system equipment and/or adjust system parameters as requested by the Owner or required for system performance.

### 3.8 COMMISSIONING AND VALIDATION

- A. Commissioning is a “fine tuning” process used for complex systems that occurs after acceptance testing, during the Burn-In Performance period and before final acceptance. It helps assure that the system performs to its fullest potential, and validates the effectiveness of the total system implementation in relation to the goals of the access control countermeasures program.
- B. After the installation and final testing of the system, an Access Control Commissioning team will be assembled to validate the best performance of the system under different scenarios. Alarm reports shall be used to verify operation of the system.
- C. This process includes participation by the Owner, Contractor, the Consulting Engineer, A third party testing agent may also be hired by the Owner to plan, conduct, and verify the Commissioning process.
- D. The Contractor shall include a minimum of sixteen (16) hours of participation in the commissioning and validation process by a minimum of two (2) employees familiar with the specific project and installation. Contractor shall adjust device installation where alarms are determined to be false.
- E. Scheduling of Commissioning and Validation testing will be by the Owner, and may occur after the Notice of Completion, but before the end of the Warranty period.
- F. Revisions to the configuration and programming of the system which are recommended by the Commissioning Team as a result of validation testing, shall be performed by the Contractor under the direction of the Owner, at no additional charge. The Warranty provisions of this specification shall apply to any configuration and programming revisions resulting from the validation testing process.
- G. Revisions and improvements recommended by the Commissioning Team which require physical modifications or additions to the approved and accepted system, including the provision or relocation of new equipment, wiring, and installation, shall be treated as additional changes to the contract, and shall be processed as defined in the Project General Provisions. Where such requested work was part of the Contractors' original scope of work, as defined in the design drawings and specifications, or in contract revisions and agreements, the Contractor shall provide the work at no additional charge.

### 3.9 FINAL PROCEDURES

Perform final procedures in accordance with Section 28 05 00, Security System General Requirements.

END OF SECTION

## USC GUIDELINE SECURITY SPECIFICATIONS

### SECTION 28 13 00

#### ELECTRONIC ACCESS CONTROL SYSTEM

##### PART 1 GENERAL

###### 1.1 DESCRIPTION

- A. This specification section covers the furnishing and installation of a complete expansion to an enterprise-wide, low-voltage, electronic access control system (EACS) at the [indicate site and building] location.
- B. 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.
- C. 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, Video Surveillance System (VSS) Integration.
- D. 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, Electrical.

###### 1.2 PRECEDENCE

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.

###### 1.3 GENERAL CONDITIONS

In accordance with Section 28 05 00, Security System General Requirements

###### 1.4 RELATED WORK

- A. In accordance with Section 28 05 00, Security System General Requirements
- B. In accordance with Section 28 05 53, Identification for Electronic Safety and Security
- C. In accordance with Section 28 07 00, Security System Integration
- D. In accordance with Section 28 08 00, Security System Testing and Commissioning
- E. In accordance with Section 28 16 00, Electronic Intrusion Detection System
- F. In accordance with Section 28 16 05, Duress Monitoring System
- G. In accordance with Section 28 23 00, Video Surveillance System
- H. In accordance with Section 27 32 26, Emergency Phone System

###### 1.5 APPLICABLE PUBLICATIONS

In accordance with Section 28 05 00, Security System General Requirements

###### 1.6 SHOP DRAWINGS & EQUIPMENT SUBMITTAL

In accordance with Section 28 05 00, Security System General Requirements

###### 1.7 OPERATING AND MAINTENANCE MANUALS

In accordance with Section 28 05 00, Security System General Requirements.

###### 1.8 SERVICE AND MAINTENANCE



In accordance with Section 28 05 00, Security System General Requirements

#### 1.9 TRAINING

In accordance with Section 28 05 00, Security System General Requirements

#### 1.10 WARRANTY

In accordance with Section 28 05 00, Security System General Requirements

#### 1.11 TECHNICAL REQUIREMENTS, ELECTRONIC ACCESS CONTROL SYSTEM (EACS)

##### A. General

1. The following information is provided to establish required system performance for the complete operating EACS access control system. Some of the performance requirements noted herein are supported and supplied by existing systems in concert with new equipment and software which shall be provided by the Contractor under this scope of work. Contractor shall provide equipment, wiring and software programming at all sites as necessary to provide a complete system as described herein and as shown on the drawings.
2. The access control system components provided under this scope of work shall be compatible with the existing EACS System and shall function as an integral part thereof. The existing EACS system is a PRO Lenel OnGuard system, providing access control services, with a Credentialing system providing global credential database services to the EACS. [Where new systems replace existing: The existing readers (and card population) at the [indicate site and building] facilities shall be reused if compatible with the Lenel system, by connecting them to the new Lenel EACS controllers]. New devices shall be provided, installed and connected to the existing system through the owner provided LAN.
3. Contractor shall be responsible for providing equipment and software to achieve the specified system performance described herein and, by reference, realize absolute and seamless compatibility with the existing system.
4. Contractor shall ensure system additions and modifications provided under this scope of work have no negative effect on the existing systems and operations, and no permanent effect beyond that specified or implied by the scope of work unless otherwise noted herein.

##### B. Purpose

The electronic access control system is designed to monitor and restrict access to specified areas, and to report on the activity and violations of restricted access in those areas.

##### C. Environment

1. The system shall be wholly contained within the [indicate site and building] facilities, but shall also be fully integrated with the campus enterprise access control systems at the PSA Central Command Center, and other remote sites. Refer to the drawings and Bid Instructions to determine the scope limitations for this phase of work.
2. Central Administrative Post: The system administrative client is located in the CAPS/PSA Central Command Center. Primary system programming, configuration and control shall occur at this location.
3. Primary Monitoring Post: Primary monitoring of alarms shall take place in the PSA Central Command Center. The console has an EACS Workstation to monitor alarms, manage response to events, and control access throughout the facility.
4. Building Administrative Post: An [indicate site and building] administrative client [to be] [is] located at the [indicate site, building, and room in which the local EACS Client is

located]. Site monitoring, site configuration, and site-related access privilege management may occur at this location. Global/Enterprise administrative functions are not supported at this location.

5. Infrastructure and Connectivity

- a. Local Sites and Buildings: The EACS workstations and controllers shall reside on the building Local Area Network (LAN) or network segment. Coordinate with the Owner on the provision of LAN ports and network rights [for new connections].
- b. Enterprise: Local LAN networks will be connected to the campus LAN/WAN, to establish EACS connectivity between campus sites and the Command Center. Coordinate with the Owner on the provision of LAN ports and network rights.

D. Attributes

1. General

- a. The existing EACS is a Lenel OnGuard® PRO Series, supporting an unlimited number of access control readers, unlimited number of inputs / outputs, unlimited number of client workstations, and unlimited number of cardholders
- b. The system shall comprise electronic access control system field devices located as shown on the drawings and connected together to provide a complete and operational system.
- c. The EACS shall be based on a distributed system of fully intelligent, stand alone controllers, operating in a multi-tasking, multi-user environment.
- d. The system shall be compliant with the existing USC EACS, and the credentials shall be compliant with the USC issued credentials.

2. Electronic Access Control System Description

- a. The Electronic Access Control System (EACS) is the key central component for managing physical access control and the bridge between physical and logical access control for this project. The system shall provide a variety of integral functions including the ability to regulate access and egress; provide identification credentials; monitor, track and interface alarms; and view, record and store digital surveillance video linked to EACS events.
- b. Descriptions within this section are part of the existing system. Various descriptions herein will be utilized as part of this project.
- c. The EACS shall be able to seamlessly interface with and monitor Controllers, reader interface modules, I/O panels, burglar alarm panels, burglar alarm panel receivers, biometric devices, personal protection devices, intercom systems, fire alarm panels (secondary monitoring only), building management systems and digital video recorders.
- d. The EACS shall be able to communicate with Controllers via RS-485, RS-232, TCP-IP/Ethernet and Dial-up via Modem.
- e. The system utilizes an open architecture where data must reside on a single database on the EACS and must be accessible in real time to every/any EACS workstation connected to the network. The system is configurable to support the following databases: Microsoft SQL Server and its subset MSDE, Oracle 9.x or IBM DB2. Oracle data may reside on Windows or UNIX platforms and DB2 data may reside on Windows, UNIX or AIX platforms

3. EACS Software Capabilities: The EACS Software shall support an unlimited number of card readers, input points, video cameras, intrusion detection points, and relay outputs. The EACS database server shall support an unlimited number of cardholders, visitors,

and assets limited only by the available memory on the controller. The database server shall also support an unlimited number of system events and System Operator transactions in the history file limited only by available hard disk space. Client Workstations shall be limited only by the limitations of the operating system server software.

4. [Indicate each function required to be provided/configured by the Contractor] [EACS Software Functionality] The Contractor shall incorporate the following existing application software features and functionality into the new work, and configure the system and devices to make use of these and any other features offered by the application software, as required by the Owner.
  - a. Area Access Manager
  - b. Time Zones
  - c. Access Levels
  - d. Temporary Access Levels
  - e. Access Groups
  - f. Holidays
  - g. First Card Unlock
  - h. Database Segmentation
  - i. Field Hardware Communications
  - j. Dual Path Field Hardware Communication
  - k. Multi-Drop Panel Support
  - l. Area Control
  - m. Global Input / Output / Event Linkage [Required]
  - n. Cardholder Use Limits
  - o. Extended Individual Strike Times
  - p. Extended Individual Door Held Open Times
  - q. Extended, on Demand, Door Held Open Times
  - r. Elevator Control
  - s. Graphical System Overview Tree [Required]
  - t. Alarms
    - 1) Pre-Alarm
    - 2) Alarm/Event Logging
    - 3) Monitor Zones
    - 4) Alarm/Event Routing
    - 5) Text Instructions
    - 6) Customizable Voice Instructions Customizable Voice Annunciation: The EACS shall allow for a customizable voice annunciation to be associated EACS alarms. The customizable voice annunciation shall allow the System Administrator to record a voice annunciation of unlimited length.
    - 7) Alarm Attributes

- 8) Alarm-Event Mappings:
- 9) Alarm Masking Groups
- 10) Input Control Module (ICM)
- 11) Current Status Indication
- 12) Color Coding for Alarm Priorities
- 13) Pre-Defined "Canned" Alarm Acknowledgment Responses
- 14) Alarm Monitoring – Column Display & Configuration
- 15) Test Mode
- 16) Alarm Filtering
- 17) Alarm Masking
- 18) On-Line Context Sensitive Help
- 19) Sorting Capabilities
- u. Device Group Support
- v. Scheduling Utility
- w. Access Control
  - 1) Denied Access Attempts Counter.
  - 2) Card Reader Time Zone Overrides
  - 3) Card Reader Options
- x. Manual Control
- y. VSS Interface
- z. Real-Time, Dynamic Graphical Maps
- 5. The Contractor shall add new applications, features, functionality, and options specified herein for the new work, and configure the system and devices to make use of these applications, features, functionality, and options, as required by the Owner.

#### E. Controllers

- 1. The Controller shall link the EACS Software to all "down-stream" field hardware components. The controller shall provide full distributed processing of access control / Alarm Monitoring rules and operations. A fully loaded and configured controller shall respond in less than one-half (0.5) second to grant or deny access to cardholder.
- 2. The controller shall continue to function normally (stand-alone) in the event that it loses communication with the EACS software. While in this off-line state, the controller shall make access granted/denied decisions and maintain a log of the events that have occurred. Events shall be stored in local memory, and then uploaded automatically to the EACS database after communication has been restored.
- 3. Controller shall incorporate the following features:
  - a. UL 294, ULC, and CE Certified
  - b. Support for Host Communications Speed of 115,200 bps for LNL-2220,
  - c. Support for Direct Connect, Remote Dial Up, or Local Area Network (LAN) Connection

- d. Support for Dual Path Host Communications - Secondary Path shall be either Direct Connect, Local Area Network (LAN) Connection.
- e. Include 6 MB of On-Board Memory (LNL-2220)
- f. LAN Support shall utilize RJ45 (10/100baseT) Ethernet Interface or Token Ring 4 MB connectivity
- g. Non-volatile Flash Memory for real time program updates and overall host communications
- h. Support for 2 wire downstream ports. Downstream ports shall be for connecting card readers and data gathering and output control panels via RS-485 multi-drop wiring configuration
- i. Initial base memory download between controller with standard memory from the EACS shall require no more than ten (10) seconds
- j. Support for up to 32 I/O consisting of RIMs, ICMs, and OCMs in any combination desired with a maximum of 16 I/OCM per controller.
- k. Support of multiple card technologies
- l. Supervised Communications between controller and EACS Software
- m. AES 128 bit Symmetrical Block Encryption conforming to the FIPS-197 standard between controller and EACS Software communications driver.
- n. Multi – drop support for up to eight Controllers per EACS communications port
- o. Support of up to eight card formats and facility codes
- p. RS-485 Full Duplex, UL 1076 Grade AA communication channel to the EACS head-end
- q. Integration to other manufacturer's card readers
- r. Uninterruptible Power Supply (UPS) with battery backup of 15 minutes for AC source.
- s. 32-bit Microprocessor
- t. Biometric Interface Support
- u. An controller downstream serial port shall multi-drop 16 access control field hardware devices using an RS-485 UL 1076 Grade A communication format allowing a distance of 4,000 feet using Belden 9842 cable or equivalent
- v. 12 VAC or 12 VDC input power
- w. Issue Code Support for both Magnetic and Wiegand Card Formats
- x. Individual Shunt Times (ADA Requirement)
- y. Up to Nine Digit PIN Codes
- z. Status LEDs for normal component and communication status
- aa. Include two on-board reader ports.

## **PART 2 PRODUCTS**

### **2.1 GENERAL**

- A. Product Acceptability: The Products section contains lists of acceptable products. If product substitutions are proposed, they must be made based upon a comparison of equivalence to the product specified and compatible with the existing USC system. Considerations may

include but shall not be limited to functional, physical, aesthetic and/or interface aspects. The Owner shall be the sole judge of whether or not a submitted substitution is deemed to be "equivalent" to that specified. Contractor may not use contractor proprietary interface modules for connections between field devices and controller

- B. Equipment shall have a UL Listed mark on the product.
- C. Assemblies shall be approved by a recognized agency acceptable to the City of Los Angeles.

## 2.2 ELECTRONIC ACCESS CONTROL EQUIPMENT

- A. System (Existing): Lenel OnGuard, PRO Edition, Electronic access control system, configured as described herein. No acceptable equal.
- B. Software
  - 1. Operating System (Existing): Microsoft Server 2008, Windows 7, or other standard operating system, as required by the proposed system. Version and configuration shall be as recommended by the manufacturer, based upon compliance with these specifications.
  - 2. Executive Access Control (Existing): Lenel OnGuard, PRO Edition Access Control Management Software, configured to provide the functionality described herein. No acceptable equal.
  - 3. Custom/User Configuration: Provide new programming as required to perform alarm, control, interface, map, graphic and database functions described herein.
  - 4. Area Access Manager: Provide Lenel Area Access Manager for this project, to support independent, local configuration features for this building or specific areas within. Contractor shall ensure the final design of controller architecture, quantity, and configuration is consistent with establishing Area Access Manager.
- C. System Controller Panels: Provide sufficient controllers and input/output boards to meet all requirements of specifications at each building.
  - 1. EACS Controller
    - a. Lenel OnGuard, LNL-2220, Intelligent Dual Reader Controller, with 6MB memory, power supply, battery standby, and Communications Module, as described herein. No acceptable equal.
      - 1) Controller shall have on board LAN connection
      - 2) Capacity shall be up to 32 devices per controller.
      - 3) Controller shall have a two reader capacity built onto the board.
    - b. Contractor shall review drawings and specifications with the Owner and Engineer, and may propose changes to the topology of the system based on device layout, where such changes improve performance or functionality of the system. The Owner has final authority as to the final approach for system topology.
    - c. Controller Connectivity
      - 1) Controllers shall support connection to the access control LAN/WAN using TCP/IP protocol, and shall also support connection to the manufacturers standard data communications protocol (RS-232, RS-485, or RS-422).
      - 2) TCP/IP-connected controllers act as a network "gateway", to re-transmit controller data via the manufacturers standard data communications protocol (RS-232, RS-485, or RS-422), to other EACS controllers. Provide controllers which support the manufacturers standard data communications protocol, RS-232/20ma, as required.

- 3) Connectivity shall be monitored by the system and report loss of communications and restoral of communications. Controller shall retain in memory events and communicate events during loss of communications to the system upon restoral of communications.
2. Equipment Modules: Provide reader, input and output control capacity at each controller location, to meet the requirements of the site configuration.
    - a. Single Reader Interface Module: Lenel Model LNL-1300 Series 2, Reader Interface Module, compatible with the selected readers for use by elevator cab reader when more than one floor access is controlled. No acceptable equal.
      - 1) Door Contact Input
      - 2) Request to Exit Input
      - 3) Supports 16 different card formats
      - 4) Two Form-C relay outputs
      - 5) RS-485 Communication to the Controller
    - b. Dual Reader Interface Module: Lenel Model LNL-1320 Series 2, Reader Interface Module, compatible with the selected readers. No acceptable equal.
      - 1) Eight Contact Inputs
      - 2) Request to Exit Inputs
      - 3) Supports 16 different card formats
      - 4) Six Form-C relay outputs
      - 5) RS-485 Communication to the Controller
    - c. Remote Input Board: Lenel Input Control Module (ICM), Model LNL-1100 Series 2, with 16 inputs (4-state supervision) and 2 auxiliary relay outputs. No acceptable equal.
    - d. Output Board: Lenel Out Control Module (OCM), Model LNL-1200 Series 2, with 16 outputs. No acceptable equal.
  3. Where applicable, add: [Star Multiplexer: Provide Lenel Model LNL-8000 Star Multiplexer module where shown, or as required to implement a star topology or to extend effective communication distances.]
  4. Controllers and modules shall be mounted within Security Terminal Cabinets (STC). Cabinets shall be suitable for the environment in which it is installed, as recommended by the manufacturer and required by the specifications.
- D. Access Control Readers: Provide USC compliant proximity card readers where shown on the drawings and indicated within these specifications. Card readers shall be "single-package" type, combining controller, electronics and antenna in one package, in the following configurations: [Confirm the type of reader(s) used for each project]
1. Non-Contact Multi-Technology Readers
    - a. Multi-Technology Reader: Multi-technology contactless reader shall read access control data from both 125 kHz and 13.56 MHz contactless smart cards and be NFC-compatible. The multi-technology contactless reader shall be optimally designed for use in access control applications that require reading both 125 kHz Proximity and 13.56 MHz contactless smart cards meeting the following requirements:
      - 1) Compatible with the existing HID 125kHz proximity identification media.

- 2) Compatible with Secure Mifare and DesFire identification media, including the Configuration allows reader to be enabled to read smart, proximity or both technologies at the same time.
  - 3) Secure access control data exchange between the smart card and the reader utilizing diversified keys and mutual authentication sequences.
  - 4) Optimal read range and read speed for increased access control throughput.
  - 5) Suitable for both indoor and outdoor applications.
  - 6) Customizable behavior for indicator lights and beeper.
  - 7) Multi-technology contactless reader shall comply with the ISO 14443 13.56MHz-related standard.
  - 8) Configurable to read data from any compatible 125 kHz technology simultaneously with 13.56 MHz data.
  - 9) Provide the ability to read card access data stored in the secure access control sector/application area of the ISO 14443 XceedID MIFARE or MIFARE DESFire EV1 card.
  - 10) Configurable to provide compatibility with all standard Prox formats up to 37 bits (including Corporate 1000<sup>®</sup>).
  - 11) Reader firmware may be upgraded in the field without the need to remove the reader from the wall through the use of factory-provided device.
  - 12) Compliant with the SIA AC-01 Wiegand standard.
  - 13) Reader shall provide the ability to transmit an alarm signal via an integrated optical tamper switch if an attempt is made to remove the reader from the wall.
  - 14) Reader electronics shall be enclosed in a full potted assembly, and provided with a quick connect wire harness.
  - 15) Audio/visual indications shall include
    - a) An audio beeper shall provide tone sequence to signify: access granted, access denied, power up, and diagnostics.
    - b) A light bar shall provide clear visual status (red/green/amber).
  - 16) Multi-technology contactless reader shall be designed for low current operation to enable migration from most legacy proximity applications without the need to replace existing access control panels and/or power supplies. Contactless smart card power requirements shall be:
  - 17) Operating voltage: 5 – 16 VDC, reverse voltage protected. Current requirements: 160 mA DC, 195 mA PEAK @ 12 VDC
  - 18) Multi-technology contactless reader shall meet the following physical specifications:
  - 19) Color: Black, Gray, Brown or Cream as approved by the project architect.
  - 20) Weatherized design suitable to withstand harsh environments
  - 21) Certified rating of IP65
  - 22) Multi-technology contactless reader cabling requirements shall be:
- b. Mullion Mounting



- 1) Provide "mullion" mounting style readers near glass doors, where shown on plans.
  - 2) Reader shall be suitable for indoor or outdoor use.
  - 3) Provide AptiQ Model MT11, compatible with existing card media. No acceptable equal.
- c. Wall Mounting
- 1) Provide "single-gang" mounting style readers for wall and stanchion mounting, where shown on plans.
  - 2) The reader shall have an approximate read range of up to 3" when used with the proximity access card.
  - 3) AptiQ Model MT15, compatible with existing card media. No acceptable equal.
- d. RFID Card Reader/Keypad Combination Assembly
- 1) Provide Reader/Keypad combination assembly where shown on drawings.
  - 2) The Keypad shall be an integral part of the reader assembly.
  - 3) The reader shall have an approximate read range of .5"-1.2" when used with the compatible access card.
  - 4) Provide Weather Kit when mounting outside.
  - 5) AptiQ MTK15, compatible with the existing card media. No acceptable equal.
2. Non-Contact Multi-Technology Reader with Magnetic Stripe Reader [*Where required for special circumstances*]
- a. Multi-technology contactless reader shall read access control data from magnetic stripe cards as well as 125 kHz and 13.56 MHz contactless smart cards. The multi-technology contactless reader shall be optimally designed for use in access control applications that require reading encoded magnetic stripe data, 125 kHz Proximity and 13.56 MHz contactless smart cards by providing:
- 1) Compatible with the existing HID 125kHz proximity identification media.
  - 2) Configuration allows reader to be enabled to read magnetic stripe, smart, proximity or all technologies at the same time.
  - 3) Secure access control data exchange between the smart card and the reader utilizing diversified keys and mutual authentication sequences.
  - 4) Optimal read range and read speed for increased access control throughput.
  - 5) Product construction suitable for both indoor and outdoor applications.
  - 6) Customizable behavior for indicator lights and beeper.
  - 7) Compliance with ISO 14443, 13.56MHz-related standards.
  - 8) Provide the ability to read card access data stored in the secure access control sector/application area of the ISO 14443 XceedID MIFARE or MIFARE DESFire EV1 card.
  - 9) Configurable to provide multiple hierarchical degrees of key compatibility for accessing the smart card access control data.
  - 10) Configurable to provide compatibility with all standard Prox formats up to 37 bits (including Corporate 1000®).
  - 11) Magnetic stripe reader shall be configurable to

- a) read tracks 1, 2 or 3 of an encoded magnetic stripe card.
      - b) output data using Wiegand or Clock & Data protocol.
    - 12) Firmware may be upgraded in the field without the need to remove the reader from the wall through the use of factory-provided device.
    - 13) Complies with the SIA AC-01 Wiegand standard.
    - 14) Multi-technology contactless reader shall provide the ability to transmit an alarm signal via and integrated optical tamper switch if an attempt is made to remove the reader from the wall.
    - 15) Reader shall be constructed in a full potted assembly, with a quick connect wire harness.
    - 16) Provide the following programmable audio/visual indication:
      - a) An audio beeper shall provide tone sequence to signify: access granted, access denied, power up, and diagnostics.
      - b) A light bar shall provide clear visual status (red/green/amber).
  - b. Multi-Technology//Magstripe Combination Card Reader Assembly
    - 1) Provide combination assembly where shown on drawings.
    - 2) The Magnetic Stripe reader assembly shall be an integral part of the reader assembly.
    - 3) AptiQ MTMS15, compatible with both the existing magstripe and proximity card media. No acceptable equal.
3. Biometric Reader Assembly
- a. Provide a stand-alone biometric fingerprint reader system, including software and hardware, where shown on the plans and described herein. The fingerprint reader shall interface with the Lenel access control system to control access through designated doors.
  - b. The reader shall be capable of storing up to 5,000 user templates in its internal database, and shall operate on the 1:N principle, in which a fingerprint presented to the reader will be scanned and compared to the entire template database, in order to search for a match. Once a match is found, the reader shall send a signal to the Lenel controller in Weigand format to communicate the applicable credential information, authorizing an entry.
  - c. Lock control based on rights management shall be provided via the Lenel system controller and OnGuard Software.
  - d. Software: Biometric device programming shall be performed via the manufacturer's administrative software and applicable database. Contractor shall coordinate with the Owner, and provide a suitable computer for the biometric system software and database.
  - e. Biometric readers shall provide the following:
    - 1) 500 dpi sensor
    - 2) Supports Ethernet (TCP/IP), RS485, and USB connectivity.
    - 3) Provides Wiegand customizable input and output. Unit shall be compatible with Lenel Weigand I/O formats.
    - 4) Provide two General Purpose Inputs, one Form C Relay Output, and one General Purpose output.

- 5) Supports Finger Only and Card plus Finger authentication.
  - 6) Provide integral proximity reader compatible with Owner's credential population.
  - 7) Transaction Log: 100,000 event storage.
  - 8) Device shall be rated for the environment in which it is deployed.
  - 9) Provide escutcheon plates and other mounting hardware as required for a finished appearance acceptable to the Owner.
- f. Mullion or Single-Gang Mounting: Provide Bioscrypt Model 4G V-Flex Lite, by Safran-Morpho, IP-65 rated, and configured as described.
  - g. Weather Resistant Mounting: Provide Bioscrypt Model 4G V-Flex WR biometric reader with built-in hood for fully exposed exterior locations, or where template capacity will exceed 5,000 users. IP-65 rated, with 10,000 template capacity operating on the 1:N identification principle, and configured as described. Coordinate recessed or flush mounting with the Architect.
4. Provide / coordinate provision of reader licenses for each door with electronic hardware controlled by the system.
- E. Reader Licenses; Provide Lenel block of 64 reader licenses. [Verify requirement for reader licenses for each project as the requirement is based on total additive numbers of readers on the system and may be required on each project][Delete if licenses are not required][Provide separate line item in bid]
- F. Command Keypad
1. Where shown on drawings, provide Lenel LNL-CK Command Keypad with 32 character backlit LCD display for activation and deactivation of monitored portals without Request to Exit function.
  2. Keypad shall support
    - a. Arm, Disarm, Bypass and Force alarm masking
    - b. Extended held open times
    - c. Reader command
    - d. PIN, mode.
- G. Access Control Terminal Cabinet (STC)
1. System controllers and field control boards serving a given area shall be installed inside Access Control Terminal Cabinets. No controller or control module shall be mounted independently of the cabinet and its power supplies. Refer to the drawings and the following description for details on STC construction.
  2. Provide Access Control Terminal Cabinets as described below, located as shown on the drawings, or at places convenient to its respective field devices. STC shall be listed by an agency approved by the City of Los Angeles Department of Building Safety. Each STC shall contain the following equipment to support the current and future alarm initiating and controlled devices to be connected at that STC location:
    - a. STC Cabinet
      - 1) Indoor: NEMA 2, hinged, locking cabinet by Hoffman or Owner approved equal, sized to fit contents. Lock shall be coordinated with the Owner allowing replacement by the Owner.

- 2) Outdoor: Stainless steel, NEMA 4X, hinged, locking handle cabinet by Hoffman or Rittal, or equal, sized to fit contents.
  - 3) Provide door tamper switch and wire into alarm input for each STC cabinet.
- b. STC Source Power
- 1) Derive primary STC 120VAC power from a designated power source in a secure location, or as shown on plans.
  - 2) Power cable shall be protected by conduit.
  - 3) Transformers shall be installed in locked cabinets, protected by tamper switches. Plug-in transformers which are not protected by locked cabinets are not acceptable.
  - 4) Serve all low voltage powered devices within the STC from the Electronics Power Supply.
  - 5) Provide barriers as may be necessary to separate Class I from Class II power.
- c. Electronics Power Supply
- 1) Provide Altronix UL Listed Class II power supplies at the STC.
  - 2) Capacity: The power supply shall be capable of powering a minimum of 125 percent of the load required at the time of acceptance (25% spare capacity).
  - 3) Power Monitoring: The system shall monitor the loss and restoration of power at the STC of both primary and secondary loss of power. Loss and restoration of power shall be displayed at the console, but shall not require resetting of the system.
  - 4) Battery Back-up: Provide battery back-up to retain functions of all electronics for a period of four (4) hours upon loss of 120VAC power.
  - 5) Transformers shall be installed in locked cabinets, protected by tamper switches. Plug-in transformers which are not protected by locked cabinets are not acceptable.
- d. EACS Controller Board: As required for connection to Owner LAN, access readers, locks, door position switches and egress devices associated with access controlled doors.
- e. EACS Alarm Input Board: As required for connection to alarm initiating devices shown connected at this location.
- f. EACS Output Control Board: As required for connection to controlled devices shown connected at this location.
- g. STC Tamper Switch: Provide a tamper switch on the STC. Connect to the system as an individual alarm point.
- h. Terminations: Provide connections to labeled screw barrier terminal blocks.
- i. Secure devices within the STC. Dress all wiring in a neat and workmanlike manner. Label conductors to match documentation.
- j. [Provide Lenel LNL-AL400ULC for 2 Lenel boards or LNL-600ULX for 6 Lenel boards where space is limited and approved by the Owner.]
3. Lenel Controller Cabinets: Lenel CTX enclosures may be acceptable as STC cabinets if they meet the requirements of an STC as described herein.

#### H. Lock Power Supply (LPS)

1. Provide Altronix, UL Listed Class II power supplies within a ventilated, locked, cabinet where indicated on the contract drawings, or as otherwise required to affect proper system performance. Cabinet shall be equipped with a tamper switch, which shall be connected to the EACS to provide a supervisory alarm. Power supply shall include separate terminals for each door lock. Power supply voltage shall be as required by the hardware supplied locks.
  2. Capacity: The power supply shall be capable of powering 200 percent of the load required at the time of acceptance (100% spare capacity).
  3. Power Monitoring: The system shall monitor the loss and restoration of power at the STC. Restoration of power shall be displayed at the console, but shall not require resetting of the system.
  4. Battery Back-Up: Power supplies shall be equipped with integral battery recharging circuits and batteries. If a separate cabinet is used for batteries, the cabinet shall be locked and provided with a tamper switch connected to the EACS.
    - a. Fail Safe Door Locks: Provide 4 hours of battery backup for low-voltage electrified door hardware.
    - b. Fail-Secure Door Locks: Provide battery backup sufficient to operate fail-secure door locks 100 times per hour, for four hours.
  5. Power supply output may be connected to a remote UL-approved distribution board of the same manufacturer mounted within the STC.
  6. Provide a Fire Alarm Interface Relay to interface the LPS to the STC and Fire Alarm System, as shown on the contract drawings.
  7. Transformers shall be installed in locked cabinets, protected by tamper switches. Plug-in transformers which are not protected by locked cabinets are not acceptable.
- I. Lock Power Supply (LPS for Latch Retraction Exit Devices)
1. Provide Command Access Technologies, UL Listed power supplies (Model PS-2 or PS-5) within a ventilated, locked, cabinet where indicated on the contract drawings, or as otherwise required to affect proper system performance. Cabinet shall be equipped with a tamper switch, which shall be connected to the EACS to provide a supervisory alarm. Power supply shall include separate terminals for each door lock. Power supply voltage shall be as required by the hardware supplied locks.
  2. Capacity: The power supply shall be capable of powering 200 percent of the load required at the time of acceptance (100% spare capacity). Provide the appropriate number of output channels to support the installed devices, plus expansion channels.
  3. Power Monitoring: The system shall monitor the loss and restoration of power at the STC. Restoration of power shall be displayed at the console, but shall not require resetting of the system.
  4. Solid-state inputs and outputs.
  5. Battery Back-Up: Power supplies shall be equipped with integral battery recharging circuits and batteries. If a separate cabinet is used for batteries, the cabinet shall be locked and provided with a tamper switch connected to the EACS. Size the batteries in accordance with the following rules.
    - a. Fail Safe Door Locks: Provide 4 hours of battery backup for low-voltage electrified door hardware.
    - b. Fail-Secure Door Locks: Provide battery backup sufficient to operate fail-secure door locks 100 times per hour, for four hours.

6. Provide a Fire Alarm Interface Link to interface the LPS to the STC and Fire Alarm System, as shown on the contract drawings.
7. Used with Command Access PM200, PWM200, and MM1 latch retraction device modules, and other compatible lock types.

J. Alarm Initiating Devices

1. Door Position Switch: Door Position Switches shall be furnished and installed by the Contractor. The Contractor shall align, prepare and fabricate doors and frames to accept specified door position switches. The Contractor shall be responsible for coordinating the installation so systems and hardware operate as specified.
  - a. Surface Mounted Door Switch: Interlogix Model 2505-A-06 or Flair Model MSS-100-23 or approved equal Surface Mounted Magnetic Switch with armored cable. Route armored cable to junction box and permanently secure to box with clamp or set-screws. Use only where flush mounted devices cannot be installed.
  - b. Non-fire Rated Doors, Flush Mount:
    - 1) Hollow Metal Doors: Interlogix Model 1076C-W or Flair Model MSS200 Concealed Magnetic Door Switch.
    - 2) Storefront Doors: Interlogix Model 1076C-W or Flair Model MSS200 Concealed Magnetic Door Switch.
    - 3) Wood Faced Doors: Interlogix Model 1277-W or Flair Model RMS-94 Concealed Magnetic Door Switch.
  - c. Fire Rated Doors
    - 1) General: Contractor shall coordinate all access control hardware equipment and installation so as to maintain the Fire Rating of each specific door to the satisfaction of the local Authority Having Jurisdiction.
    - 2) Hollow Metal Doors: Interlogix Model 1078CW, concealed magnetic door switch, or equal, approved by UL for use on UL classified fire doors with metal faces, rated up to 3-hours.
    - 3) Storefront Doors: Interlogix Model 1078CW Concealed Magnetic Door Switch, or equal.
    - 4) Wood Door w/Hollow Metal Frame: Interlogix Model 1078CW Concealed Magnetic Door Switch, with Interlogix Model 1835 Mini-Max Wide Gap Magnet. Magnet shall be made of rare-earth magnetic materials, and shall be of 5/8" x 1/8", cylindrical (washer) shape. Drill 1/8"-deep hole to flush mount magnet to top of door.
  - d. Gates and Roll-Up Doors: Interlogix Model 2205-A, 2507A series, or Flair Model 1000, with armored cable. Route armored cable to junction box and permanently secure to box with clamp or set-screws.

K. Exit Request Detector:

1. Coordinate with the door hardware vendor and use the provided Exit Request Touch Bar or integral lock signal switch, as specified in Division 08.
2. Existing locations: Where required by the door configuration and approved by the Owner, provide Bosch 160/161 series Passive Infrared Detector, or equal by Kantech, at doors without electronic locking devices [and where door hardware is not upgraded as part of the project].

L. *Provide Dayton Model 5YR20N, or equal, with compatible relay base, to provide a buffer for the*

- M. Provide IDEC RTE series interval timer, or equal, for interface with motorized door Push Plates and the automated door operator. This will be used to provide a functional time extension for the interaction between the EACS and the automated door hardware, to avoid hardware damage and prevent unwanted alarms.
  - 1. Unit shall be UL listed and operate on 24VDC.
  - 2. Unit shall mount to UL listed relay socket.
  - 3. Unit shall mount within the door operator housing.
- N. Local Alarm Horn: Security Door Controls Model 400U-SN, or equal, mounted on a single gang wall plate.
- O. [Door Release Button, Wall Mounted: Provide Schlage Series 620 Heavy Duty Pushbutton, or equivalent by Security Door Controls, momentary contact, green lighted mushroom pushbutton. Connect button to an EACS input. Program the EACS to unlock the related door, through EACS logic, when the pushbutton is activated.]
- P. [Door Management/Exit Alarm Panel
  - 1. Provide door exit alarms for local and remote monitoring of the secure status of the doors as indicated on the Drawings.
  - 2. A dual-level horn within the Door Management Alarm shall sound (96 and 103 dB @ 3 feet) and a Form C alarm output contact from the Exit Alarm shall be activated immediately whenever a forced entry occurs.
  - 3. An integral key switch shall be provided for alarm shunt, alarm override and alarm reset. The key switch shall be incorporated into the faceplate of the Door Management Alarm.
  - 4. Local alarm and alarm output contact shall be reset by the integral key switch or remotely through a dry contact. The unit shall also include an automatically reset feature (adjustable 0 seconds to 5 minutes or manual) that when enabled, will reset the Door Management Alarm upon closure of the door.
  - 5. A bi-color LED on the Door Management Alarm faceplate shall illuminate whenever the unit is armed or overridden.
  - 6. The Door Management Alarm shall be mounted in the wall where shown on the plans. Mount the panel at 42 inches A.F.F. The unit shall mount in a 2 gang (3 gang for rim cylinder key switch model) electrical box with a minimum depth of 2 ½ inches.
  - 7. Provide Designed Local Access Control, Inc. (DSI) Model ES4300 Series, or equal.]
- Q. [Visual Alarm/Notification Device: Provide Honeywell Model 710BL Strobe Light, or equal, where shown on plans. Strobe shall be blue, 6-12VDC. Connect to an EACS output, and configure strobe to operate when a duress button in that zone is initiated.]
- R. [Audio-Visual Alarm Device: Provide UL Listed signaling device Gentex Corporation GE3 series low profile strobe – [strobe/horn] where shown on plans. Strobe shall be off-white with no lettering. GEC3 series shall have an audible module and have capability for chime, whoop or 2400Hz tones either constant sound or temporal tone.]
- S. COMMUNICATIONS SERVER APPLICATION HARDWARE [Verify requirement for this equipment prior to issue for construction] [Provide instruction for separate line item in bid when required] [(Equipment and software supplied by CAPS IT, funded by Contractor when required by system expansion)]
  - 1. Manufacturer: HP Proliant (latest generation meeting the requirements) for back end processes
    - a. Note 1: Contractor shall confirm with USC CAPS IT the requirement for the COM SERVER for each project. The server configuration will be based on the specific

intent for the hardware. The internal configuration for either back end or NVR processes may be different based on the expected utilization of the Lenel server in a given region.

- b. Note 2: Servers are co-located in the university's Network Operations and are supported by the Career and Protective Services Information Technology (CAPS IT) staff. Network connectivity to be designed to ensure minimal disruption to existing operations.
  - c. Operating System: Windows Server 2008
  - d. Virus Protection: Symantec Antivirus (latest generation)
  - e. Encryption: Verisign Standard SSL, GPG, Secure FTP
  - f. Firewall: Symantec Sygate
  - g. Backup & Recovery: Veritas Backup Exec
  - h. Database Management System (DBMS): Microsoft SQL Server 2008 or 2005
- T. Client Workstation *[Insert when new workstation is provided as part of the project separate from EACS/VSS workstation]*
- 1. The EACS/VSS Client Workstation(s) shall be a Dell or HP desktop computer that meets or exceeds the current Lenel specifications for a High Performance Video Client PC, with a dual AMD Radeon HD 7470 Video Card (1GB DDR3 DP/DVI) or better. Contractor shall obtain CAPS IT approval before installation.
  - 2. Provide Lenel approved SMS Client Software.
  - 3. (1) 24" LED Monitors (must support 1920x1200 minimum)
  - 4. Audio with speakers, Multimedia keyboard with palmrest, 6-button Laser mouse and surge suppression strip
  - 5. 3 year limited warranty
  - 6. Windows 7 Professional, or other operating system approved by Lenel and the Owner.
  - 7. Microsoft SQL Server 2008 or 2005 Client License
- U. Supervised Wireless Alarm System: *[Insert where used]*
- 1. RF Receiver: Provide Linear Model DXSR-1504 Supervised 4-Channel Receiver, or equal by Interlogix/Sentrol or ADI, with 32 transmitter input channels and 4 output zones. Mount receivers at 12" below finished ceiling in locations shown on plans. Connect 4 receiver output zones to 4 individual alarm interface relays located at the STC. Connect the alarm relay contacts to two individual EACS alarm inputs for alarm annunciation. Receiver and associated power source shall be UL listed.
    - a. Dual diversity superheterodyne receivers
    - b. Range of 1,500 feet, line-of-sight
    - c. Supervision
    - d. Four individual solid-state alarm outputs, plus low battery and status reports
    - e. LED Display of RF Channel Activity
    - f. Momentary, latch, or toggle output selection
  - 2. RF Transmitter: Provide *[quantity (minimum 10)]* Linear Model DXS-31 Supervised Door/Window Transmitter, or equal by Interlogix/Sentrol or ADI and compatible with the receiver, *[add miscellaneous types such as vibration or alternate type for Owner use]*



compatible with the proposed RF Receiver. The Transmitters will be used as re-locatable protection devices on the changing exhibits in the reception/lobby areas. They may be deployed using their internal magnetic switch, or as a transmitter for other types of intrusion detectors. The Transmitters shall be turned over to the Owner at the conclusion of the project.

## 2.3 WIRE AND CABLE

- A. General: Cables which are not installed in conduit shall be a version of the specified cable rated for use in plenums.
- B. System cable: Provide cable as shown below, or as recommended by the Manufacturer.
  - 1. Composite Cable (Reader, Lock, Monitor, REX): Arrow Wire ACP-3NS-1SH-9MR jacketed Plenum cable with overall shield, including (6) Conductor Shielded 22AWG w/ripcord, 4-Conductor 22AWG w/ripcord, 4-Conductor 22AWG w/ripcord, and 4-Conductor 18 AWG w/ripcord; or equal by Connect Air International (WSEC Comp 2835), with written approval by Owner
  - 2. Lock Power, at Double Doors: Arrow Wire 32HB4-8 jacketed Plenum cable, unshielded, 4-conductor 18 AWG (7-strand), unshielded, or approved equal.
  - 3. Request To Exit Cable, at Double Doors: Arrow Wire 32FB4-6, Plenum rated jacket, 4-conductor 22 AWG (7-strand), unshielded, or approved equal.
  - 4. Special Control Cable, at Double Emergency Exit Doors with Power Booster: Arrow Wire 32LE4-8 Plenum rated cable, 4-conductor 12 AWG (19 strand), unshielded, or approved equal.
  - 5. Card Reader Cable for second card reader at same portal: Belden 5542FE, 3 Pair Shielded 22AWG or approved equal.
  - 6. Alarm Monitoring: Belden 5500FE, 1Pair Shielded 22AWG, or equal.
  - 7. Area Motion Detector: Belden 5441FE, 2 Pair Shielded 20AWG, or equal
  - 8. Push Buttons: Belden 5300UE, 2-Conductor 18AWG.
  - 9. Data: Belden 5441FE, 2 Pair Shielded 20AWG, or equal.
  - 10. Horn: Belden 5300FE, 1 Pair Shielded 18AWG, or equal.
  - 11. Network Cable: As required by Owner Infrastructure.
- C. Cable installed below grade shall be rated for immersion in water.

## PART 3 EXECUTION

### 3.1 GENERAL

In accordance with Section 28 05 00, Access Control General Requirements.

### 3.2 SPECIAL INSTRUCTIONS

- A. Door Hardware Coordination
  - 1. Doors shall not be locked in path of legal egress.
  - 2. Refer to Section 08 71 00 for door hardware requirements and coordination. Contractor shall work directly with door hardware supplier to ensure the provision of specified mechanical and electronic functionality.
  - 3. Request-To-Exit Activation: Contractor shall configure system such that Request-To-Exit devices and System Controllers will react quickly enough to bypass alarms before a fast-moving individual can reach and open the door. This bypass process shall be evaluated

and verified by the Contractor on the fully configured and operational EACS system, prior to acceptance testing.

4. Fire Alarm Interface: Electrified locks and strikes which are part of this work and which may be locked in the path of legal exiting, shall be connected to the building Fire Alarm System in accordance with AHJ requirements such that they automatically unlock in the event of activation of the Fire Alarm System. This shall occur whether the activation is a result of a manual pull station, smoke detector or sprinkler flow switch.
  - a. A fire alarm "general/common alarm relay" shall be programmed at the fire alarm control panel to activate the EACS interface relays located in each Lock Power Supply cabinet. The Access Control Contractor shall research and provide all necessary fire alarm system conduit, wire, hardware and programming to perform the required interface.
  - b. This interface shall not depend on the EACS Host or Remote Controllers for its operation. Locate these interface relays electrically ahead of lock power distribution as shown on the drawings. The Contractor shall supply and install programmed alarm interface relay(s) with sufficient capacity to control the power supplied to all controlled locks.

B. Wireless Lock Interface

1. AD400 wireless locks provided under Division 08 are to be integrated into the Lenel OnGuard System via model PIM400-485 (Division 08), with direct RS485 connection to Lenel communication ports, or via PIM400-TD2 (Division 08) to support a Weigand connection.
2. Contractor shall provide required hardware, software, and services to interface the Wireless Lock System with the EACS for the control and management of wireless electrified locking devices.
3. Tamper outputs from PIM400-TD2 modules shall be wired into the Lenel system input points for remote battery status and tamper monitoring. Provide a Lenel I8 input for each TD2 module in the system.

C. Access Control and Lock Configuration

1. Secured Doors: Doors equipped with electric locks shall be individually programmed for locking and unlocking at specific times of the day. A valid credential presented at a reader will allow the portal to unlock for a programmed period of time.
2. Stairwell Door Locks
  - a. Stairwell doors which are locked from the stairwell side shall have the capability to be simultaneously unlocked upon a signal from the Fire Command Center, Fire Alarm Panel, or the Access Control Command Center.
  - b. Stairwell locking systems shall, in all respects, comply with the requirements of the California Building Code, "Means of Egress".
  - c. Contractor shall provide clearly labeled switches, in the required locations, to unlock all stairwell doors simultaneously. Coordinate wall or desk mounted switch style, with the Owner and the Authority Having Jurisdiction.
  - d. This interface shall not depend on the EACS Host or Remote Controllers for its operation. Locate interface relays for each stairwell door electrically ahead of EACS lock control, to independently override EACS control.
3. Upon authorization by card reader or manual means, "door force" and "door held open" alarms associated with the portal shall be automatically bypassed (prevented from

reporting an alarm) for a duration of time that is programmable on an individual door and individual cardholder basis.

4. The door shall re-lock immediately upon closing, after an authorized access, and the bypass duration shall be immediately truncated. A door position switch will be required at every door for this purpose. The same door position switch shall be used to sense the position of the door for "door forced" and "door held open" alarms.
5. Free Egress Authorization
  - a. Unless otherwise shown on the plans or described herein, the system shall detect the normal egress of a user at any individual portal and shall bypass any alarm associated with the portal for a duration of time that is programmable on an individual door and individual cardholder basis.
  - b. Timing shall be independently programmed for each portal during the initial enrollment process. This function allows extended timing for disabled persons to pass through a portal.
  - c. The timing function shall automatically truncate after an adjustable period (0 - 4 seconds) after a portal is closed. This feature allows a subsequent alarm at the portal to be detected, and prevents the portal from being re-opened without an authorized request.
  - d. "Request-to-Exit" devices shall be used to signal the system that an individual is ready to exit the secured door. Request-to-Exit devices may include but not be limited to
    - 1) Integral Lock Handle Signal Switches
    - 2) Touch Bars (Electro-mechanical or electronic)
    - 3) Push Bars (Mechanical)
    - 4) Push Buttons
  - e. On doors with integral electro-mechanical locking mechanisms (strikes, electrical panic hardware, or electrical mortise locks), the mechanical action of the door hardware shall enable egress without requiring release of the electrical mechanism. The Request-to-Exit device shall not unlock the door.
  - f. On doors with integral electro-mechanical locking mechanisms (magnetic locks), a Request-to-Exit device may have to unlock the door, releasing the electrical mechanism for the programmed duration. Refer to the drawings and details for direction.
  - g. On doors with Intercom system, Contractor shall interconnect the intercom system door release button to activate the Request to Exit function and unlock the door. The door release request contact shall be connected to an input on the EACS, such that an event shall be registered into the EACS system indicating this operation.
- D. Sequences: Verify each door type sequence at each door with the Owner.
  1. Doors with Door Position Switch (DPS) and Request-to-Exit (REX) devices
    - a. DPS and REX contacts shall be wired to EACS auxiliary input. Configure the EACS to mask the associated DPS alarm for a minimum of 45 seconds.. Coordinate the required masking duration with the Owner.
    - b. EACS shall report a "door forced" alarm when any time the door is opened without a valid REX request. The subsequent operation of an associated REX shall not abort a "door forced" alarm already sensed by the system.

- c. EACS shall report a “door-held-open” alarm after the door has been opened and the masking duration has ended.
2. Doors with Electronic Locking (EL), DPS and REX devices
    - a. DPS and REX contacts shall be wired to EACS auxiliary input. Configure the EACS to mask the associated DPS alarm for a minimum of 45 seconds.. Coordinate the required masking duration with the Owner
    - b. Electronic lock shall be wired to EACS auxiliary output. Configure the EACS to mask the associated DPS alarm during timed or commanded unlock
    - c. Electric lock shall be locked and unlocked based on preprogrammed schedules and conditions, and by manual control from the EACS client workstations.
    - d. EACS shall not cause an alarm event when door is unlocked
    - e. EACS shall report a “door forced” alarm when any time the door is opened without a valid REX request. The subsequent operation of an associated REX shall not abort a “door forced” alarm already sensed by the system.
    - f. EACS shall report a “door-held-open” alarm after the door has been opened and the masking duration has ended during locked mode
    - g. REX device shall not unlock the door
  3. Doors with Card Access Control (CR), EL, DPS and REX devices
    - a. CR, EL, DPS and REX devices shall be wired to a door controller board
    - b. Electronic lock shall be locked on command from the system at any time
    - c. Electronic lock shall unlock during a preset time zone or from the system
    - d. Electronic lock shall be unlocked and shall not require use of card reader during timed unlock mode
    - e. EACS shall not report activity when door is unlocked
    - f. During locked mode Card Reader shall unlock the door, mask DPS preventing alarm
    - g. EACS shall report a “door-held-open” alarm after the door has been opened and the masking duration has ended
    - h. EACS shall report a “door forced” alarm when any time the door is opened without a valid REX request. The subsequent operation of an associated REX shall not abort a “door forced” alarm already sensed by the system.
    - i. REX device shall not unlock door
  4. Doors with Auto-Operators, Proximity CR, EL, DPS and REX devices
    - a. Auto-Operator controls, CR, EL, DPS and REX devices shall be wired to a door controller board
    - b. Electronic lock shall be locked on command from the system at any time
    - c. Electronic lock shall unlock during a preset time zone
    - d. EACS shall not report alarm activity when door is unlocked
    - e. Day mode; proximity card reader shall activate the auto operator to open the door
    - f. Secure mode;
      - 1) Card reader, auto operator function, shall activate the auto door operator at all times.

- 2) Card Reader shall unlock the door, mask the DPS device preventing alarm and allow use of door open pushbuttons. Electronic lock to be unlocked prior to door open mechanism is engaged. Where auto door equipment is not provided with door open pushbuttons, the door shall automatically open after unlocking
- g. EACS shall report a "door-held-open" alarm after the door has been opened and the masking duration has ended during locked mode
- h. EACS shall report a "door forced" alarm when any time the door is opened without a valid REX request. The subsequent operation of an associated REX shall not abort a "door forced" alarm already sensed by the system.
- i. Use of push plate shall activate the EACS REX, unlock the door and operate the auto door system
- j. Door shall report a door held open time when REX (push plate or signal from the door operator) is activated, door is opened from the secured side and the system bypass time has expired during locked mode.
- k. Verify interior push plate is operational in both locked and unlocked modes
- l. Verify exterior push plate is operational during unlocked mode
- m. Verify exterior push plate is non-operational until valid card read during locked mode
- n. Verify exterior push plate is operational after valid card read during locked mode
- o. Verify door can be manually opened during locked mode from secured side
- 5. Doors with Auto-Operators, Dual CR (Mag Stripe and Proximity types), EL, DPS and REX devices
  - a. Auto-Operator controls, CR, EL, DPS and REX devices shall be wired to a door controller board
  - b. Electric lock shall be locked on command from the system at any time
  - c. Electric lock shall unlock during a preset time zone
  - d. Door shall not report alarm activity when door is unlocked
  - e. Secure mode
    - 1) Magnetic stripe card reader;
      - a) Card Reader shall unlock the door, during locked mode, bypass DPS preventing alarm and allow use of door open pushbuttons.
      - b) Electronic lock to be unlocked prior to door open mechanism is engaged.
      - c) Where door open pushbuttons are not provided the door shall automatically open after unlocking
    - 2) Proximity card reader, auto operator function, shall open the door at all times.
    - 3) During secure mode the card reader shall operate as item e above.
  - f. EACS shall report a "door-held-open" alarm after the door has been opened and the masking duration has ended during locked mode
  - g. EACS shall report a "door forced" alarm when any time the door is opened without a valid REX request. The subsequent operation of an associated REX shall not abort a "door forced" alarm already sensed by the system.
  - h. Use of push plate shall activate the EACS REX, unlock the door and operate the auto door system

- i. Door shall report a door held open time when REX (push plate or signal from the door operator) is activated, door is opened from the secured side and the system bypass time has expired during locked mode.
  - j. Verify interior push plate is operational in both locked and unlocked modes
  - k. Verify exterior push plate is operational during unlocked mode
  - l. Verify exterior push plate is non-operational until valid card read during locked mode
  - m. Verify exterior push plate is operational after valid card read during locked mode
  - n. Verify door can be manually opened during locked mode from secured side
- 6. Auto Sliding Doors shall operate similar to Doors with Auto-Operators.
  - a. Contractor to coordinate and confirm door hardware includes electronic remote door locking control capability.
  - b. Verify sliding door break a way feature is not disabled when door is in legal path of egress
- 7. [Insert when provided] Doors associated with control keypad
  - a. Control keypad to be wired to door control module
  - b. Door shall operate similar to above sequences.
  - c. Door control hardware shall incorporate a local control keypad to bypass alarm for extended times
  - d. Keypad shall activate a remote light assembly alerting staff the door is on bypass.]
  - e. Motorized Sliding Doors (Elephant doors)
    - 1) Coordinate locking mechanism with motor control supplier to allow doors ability to be monitored and secured
    - 2) Door to have remote keypad for bypass of alarm when opened from the motor controller located within the area
  - f. Roll Up Doors
    - 1) Provide monitoring position switch with armored cable
    - 2) Provide keypad for local bypass of alarm with remote indicator (where shown on plans) to indicate bypass of alarm.
- 8. Exterior Gates
  - a. Insert as defined by hardware group. [Provide gate with electric strike] [Provide gate with electrified mortise handle] CR, EL, DPS, REX wired to input / output / door controller card as required by application.
  - b. Gate shall operate as described for door with similar access control devices.
- E. Electrical Connections to Door Hardware: Wire connections to door hardware pigtail leads shall be made using the manufacturer-provided quick-connect devices, or by Dolphin insulated displacement connectors. Wire nuts and splices are not acceptable.
- F. Tamper Devices
  - 1. Terminal cabinets, equipment cabinets, enclosures, power supply cabinets, exposed wireways, and pull and junction boxes with wire connections or splices shall be equipped with tamper switches programmed to report an alarm.

2. Junction boxes requiring tamper switches that are associated with an individual alarmed device (such as a door position switch) may report to the respective device alarm point, if end-of-line resistors and the system are configured to support 6-state alarm reporting. Other cabinet and box tamper switches shall report as independent alarm points.
3. Power Supply/Battery Chargers: Power supply/battery chargers shall be connected to alarm monitoring points to provide an "Event" indication of tamper, power failures and other system troubles.

G. [Insert when part of the project] Elevator Work

1. Elevator car floor selection shall be individually controlled by means of an access reader within the elevator. Control shall be accomplished by disabling/enabling elevator control buttons within the elevator car with respect to building time schedules and authorization rights unique to each card-holder
2. Review elevator specifications for integration between the EACS and elevator systems.
3. Verify the compatibility and completeness of the proposed hardware and its installation, submit detailed drawings showing the proposed modifications and installation, and provide all equipment and services required to achieve the specified electrical and mechanical performance. Coordinate acceptable hardware, modification and installation techniques with the Architect and the Elevator Contractor.
4. The Elevator Contractor shall provide appropriate traveling cables, elevator controller hardware and software to perform elevator control functions based on access control authorization signals generated by the EACS.
5. Elevator Contractor Provisions:
  - a. The EACS shall be equipped with, and programmed to provide, individual floor button outputs to the elevator system upon presentation of an authorized access card. Corresponding inputs must be provided on the elevator control system, for each car and floor button.
  - b. [The elevator control system shall be equipped with, and programmed to provide, the EACS with individual floor selection outputs upon user selection of floor buttons, after the card is authorized. Corresponding inputs must be provided on the EACS control system, for each car and floor button.]
6. Notwithstanding time and authorization scheduling, elevators shall always respond to a call initiated from above the ground floor and shall always allow travel from the initiating floor to the ground floor to permit exiting the building.
7. Elevator Control Operating Modes
  - a. Access Mode: In the access mode, the passenger may transit to any floor by stepping onto an elevator and pressing any floor button, except those individual floors scheduled to remain in secure mode.
  - b. Secure Mode: In the secure mode, a person desiring to go to any floor above the ground floor shall present a valid access card to the card reader in the elevator car. Once authorized, the passenger may then press any floor button for which he has been granted access and the elevator shall respond to the request. Once pressed, the authorized floor button shall light and remain lit until the elevator travels to the respective floor.
  - c. It shall be possible to program access and secure modes on an elevator by elevator and floor by floor basis using the access control system.
  - d. Common Modes: Pressing the "call" button on any floor will cause the elevator to proceed to that floor and open its respective doors. Anyone may board an elevator

from any floor and travel to the ground level without assistance from the access control system. In this mode, the elevator will not stop on any floor other than the floor of original initiation until its travel cycle is completed by reaching the ground floor. Elevator functions are provided by the Elevator Contractor.

- e. Fire Recall Mode: EACS control over the elevator cars shall be disabled by the elevator controller in the event of a "fire recall" command from the Fire Alarm System. In that event, elevators will be recalled to the first floor or the floor of alternate recall as defined by life-safety requirements. Recall and fire/life-safety control modes are not provided by the EACS
8. Access/Disable Mode: A key-switch within each elevator shall disable the access control system for that elevator only, providing an immediate transfer to access mode for that elevator regardless of any malfunction of the EACS. This switch shall not depend on EACS system activity for its operation Elevator Call Control
9. Provide access card reader at elevator call buttons. Card reader shall be connected to the elevator operator to prevent elevator call at first floor only
10. Coordinate location of connection with elevator contractor

#### H. EACS Connectivity

1. Access Control Network: EACS Servers, Client Workstations and Controllers shall reside on the Owners' Local Area (LAN) and/or Wide Area Network (WAN) to allow global event activity and shared data interchange.
2. Provide and coordinate with Owner IT adequate network "firewalls" to maintain the security of EACS controls and information while connected to shared computer networks and transmission media. Contractor shall coordinate shared resource usage with the Owner, and develop network security schemes acceptable to the Owner to ensure the integrity of the EACS.
3. LAN Communications & Connectivity, (Integrated CPU's and Controller's)
  - a. Provide LAN communications interfaces for the applicable EACS Server, Clients and Controllers to support multiple workstation and integration schemes that are part of this work.
  - b. LAN Communications: Contractor shall utilize the facility's Local Area Network for EACS connections and interfaces, as shown on the drawings and described herein.
  - c. Coordinate with EACS equipment and software manufacturers to provide network interface devices compatible with the established LAN/WAN network.
  - d. Coordinate with the USC Information Systems Department to provide servers, EACS clients, network interface devices, bandwidth utilization, and appurtenances acceptable to the Owner.
4. Controller Communications
  - a. Inter-Facility: Between facilities, buildings and controller "groups", the controller network shall be implemented utilizing the access control Owners infrastructure and connectivity, as shown on the drawings and described herein.
  - b. Between controllers at an individual location, and between controllers located within the same building, the controller network may be implemented using standard, twisted, shielded copper conductors as approved by the system manufacturer. It is also acceptable for controllers to be LAN connected, regardless of location.

#### I. Emergency Standby Power



1. Servers, Computers, Clients, and Other 120VAC Equipment: Provide a UPS with sufficient time for power transfer where the respective buildings have an Emergency Power (EP) source. Where a building EP source is not available, provide sufficient UPS time to allow the system to run for a minimum of 1-Hour, plus (15) minutes to manage the shutdown process.
2. Low-Voltage Equipment: EACS Remote Controllers, peripheral devices and Lock Power Supplies shall also have their own 4-hour battery back-up systems.
  - a. Power back-up may be in the form of direct DC battery power back-up or by 120VAC Uninterruptable Power Supplies (UPS), depending upon equipment requirements.
  - b. Lock Power Supplies shall allow fail-secure locks to be operated by the system a minimum of 100 times-per-hour, during this time period. Fail-safe locks shall be maintained for the full 4-hours.
  - c. Battery back-up systems may be distributed throughout the facility to provide the required emergency power to individual components.
  - d. Battery back-up systems shall include battery chargers to keep storage batteries at their peak charge.

### 3.3 ACCESS CONTROL SYSTEM INTEGRATION

Provide access control system integration equipment, software and programming, in accordance with Section 28 07 00, Access Control System Integration. In addition provide specific integration schemes noted

#### A. EACS Video Integration

1. Provide a Video surveillance system management solution as an integral part of the EACS environment. Refer to Section 28 23 00, Video Surveillance system.
2. Any alarm or event in the EACS shall have the ability to be associated with a digital video clip, or live view in real time. The VSS shall support user defined pre and post-event recording modes
3. Each camera shall be configurable for a 32 alphanumeric character name and shall allow for the setup and adjustment of brightness, contrast, archiving, motion detection, Pan / Tilt / Zoom, on a per camera basis.
4. The VSS shall support VSS PTZ control via the EACS video interface for pan tilt zoom functional cameras.
5. VSS shall not have more than 150 millisecond latency.

#### B. EACS/Emergency Phone Integration

1. Provide alarm integration from the Emergency Phone System solution as an integral part of the EACS environment.
2. Integrate the alarm point with the VSS system.

#### C. EACS/Intercom System Integration

1. Provide alarm integration from the Security Intercom System solution as an integral part of the EACS environment.
2. Integrate the alarm point with the VSS system.

### 3.4 EQUIPMENT, RACK AND CONSOLE INSTALLATION

Mount equipment in rooms, consoles, equipment racks, and desktops in accordance with Section 28 05 00, Security System General Requirements.

### 3.5 GROUNDING PROCEDURES

Provide grounding of all systems and equipment in accordance with Section 28 05 00, Security System General Requirements.

### 3.6 WIRE AND CABLE INSTALLATION PRACTICES

Provide wire and cable installation in accordance with Section 28 05 00, Security System General Requirements.

### 3.7 DATABASE PREPARATION, CHECKING AND ACTIVATION

- A. Provide database preparation, checking and activation for systems and equipment in accordance with Security System General Requirements, Section 28 05 00.
- B. Contractor shall import the existing cardholder database into the new system, as part of this work.
- C. Provide the following special programming services:
  - 1. Contractor shall research with the Owner, develop and install executive and user software required for the final acceptance of the system as specified herein and on the drawings.
  - 2. Contractor shall provide the Owner with forms and instructions to facilitate the gathering and entry of user software data. Forms shall include but not be limited to information regarding cardholder data, access privileges, time schedules, portal groups, access groups, alarm points, tenant/elevator authorization, password protection levels, two-man and anti-passback locations
  - 3. Default Access control time zones for each building shall be set as follows:
    - a. Normal Business 6 AM to 6PM allowing free access through any portal without creating an alarm event
    - b. Card Access Only from 6PM to Midnight by card holders with valid cards.
    - c. Restricted Access from Midnight to 6AM for authorized card holders only as programmed by USCard or Department of Public Safety

### 3.8 START-UP RESPONSIBILITY

Provide start-up services for all systems and equipment in accordance with Security System General Requirements, Section 28 05 00.

### 3.9 PRELIMINARY INSPECTION AND TESTING

Provide preliminary inspection and testing services for systems and equipment in accordance with Testing and Commissioning, Section 28 08 00.

### 3.10 SYSTEM PERFORMANCE TESTING AND ADJUSTING PROCEDURES

- A. Provide performance testing and adjusting of systems and equipment in accordance with Testing and Commissioning, Section 28 08 00.
- B. Electronic Access Control System Testing
  - 1. Test and verify the normal operation of every alarm point in all four states at each alarm panel. Test each alarm point for the alarm function by normal operation of the alarm point.
  - 2. Test and verify the normal operation of the Access Control System for each sequence.
    - a. Minimum testing shall include but not limited to:
      - 1) Valid Card Read (No Alarm)

- 2) Electronic lock relock time (Door not opened)
  - 3) Door held open alarm time (Alarm)
  - 4) Forced door open (Alarm)
  - 5) Electronic lock relock on close (Closed within relock time)
  - 6) REX bypass Alarm on exit
  - 7) REX does not unlock door
  - 8) Valid card read during active REX
  - 9) Associated Camera integration call up during alarm event
- b. Testing shall be recorded on approved forms.
3. Test each door during its programmed secure time period to assure that the system commands the lock to activate, and permits access by valid access card holders within one second from presentation of the access card.
  4. Verify egress systems on access controlled doors work correctly.
  5. Verify system integration schemes function automatically and correctly.
  6. Verify activity at Client Monitoring Station functions correctly
  7. Verify operation of auto-door operation.
- C. Wireless Locks: [Include where wireless locks are used on the project] Wireless locks connected to the system should have the following steps performed as part of commissioning the system for optimal performance and battery life. Contractor shall utilize the Schlage Utility Software (SUS) and Handheld Device (HHD) for testing.
1. With HHD, make sure latest firmware is installed on each lock, update firmware to latest revision off of [schlage.com/support](http://schlage.com/support) if not
  2. With HHD, set locks First, Delay, Retry setting to 300,300,7 (Default 300,200,5)
  3. With HHD, set Power and Communication Failure Modes to Fail Secure
  4. With HHD, set cache mode to Full Card Number, 35 bit, Purge 5 Days Unused (Denise, please confirm this as an audit will not exist when communication has failed and cache takes over)
  5. With HHD, uncheck all credential technologies not used by the campus under Reader
  6. While linking new locks to PIMs, no more than 3 red lights are acceptable during the linking process. If 4 or more lights flash red instead of green, integrator shall move the PIM to a more optimal location, change the frequency of the PIM, or add a remote antenna to the PIM until linked successfully.
  7. For applications utilizing PIM400-TD2s, wake-up on radio shall be enabled via the HHD and set to 10 second heartbeat.
- D. Emergency Phone [Include when Emergency Phones are shown on plans]
1. Verify phone indicator is on
  2. Verify phone visual indicator flashes when activated.
  3. Verify voice communication with called station is at acceptable audible level

### 3.11 BURN-IN PERFORMANCE PERIOD

Provide a burn-in performance period to demonstrate the stability of the system, in accordance with Testing and Commissioning, Section 28 08 00.

### 3.12 COMMISSIONING AND VALIDATION

Provide commissioning and validation services to prove and improve the effectiveness of the system, in accordance with Testing and Commissioning, Section 28 08 00.

### 3.13 TRAINING

- A. Provide training requirements of Security System General Requirements Section 2805 00
- B. Contractor shall provide a minimum of two (2) reprogramming training sessions within twelve (12) months of the final acceptance of the system to modify the user programming.
- C. User group training shall include;
  - 1. Building walk-through indicating locations of equipment and their usage
  - 2. User operation of client workstations, including alarm monitoring, manual door override, card reader reports, and along with user group special operational request.
- D. Maintenance group training shall include;
  - 1. Building walk through indicating locations of equipment and their usage
  - 2. Location and usage of project specific forms located in the equipment showing relationship between devices and connectivity to the Owners network
  - 3. Trouble shooting procedures
  - 4. Operational usage of the equipment
  - 5. Procedures for obtaining technical service and repair of equipment.

### 3.14 FINAL PROCEDURES

Perform final procedures in accordance with section 28 05 00, Security General Requirements.

END OF SECTION

**USC GUIDELINE SECURITY SPECIFICATIONS**  
**SECTION 28 16 00**  
**ELECTRONIC INTRUSION DETECTION SYSTEM**

**PART 1 GENERAL**

**1.1 DESCRIPTION**

- A. General Description: This specification section covers the furnishing and installation of a complete, low-voltage, Electronic Intrusion Detection System (EIDS).
- B. Contractor shall furnish and install security hardware devices, mounting brackets, power supplies, switches, control equipment, and other components of the system as shown and specified.
- C. Contractor shall 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, Electrical.
- D. General Conditions: Provide the work in accordance with Section 28 05 00, Security General Requirements.

**1.2 PRECEDENCE**

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.

**1.3 GENERAL CONDITIONS**

In accordance with Section 28 05 00, Security General Requirements

**1.4 RELATED WORK**

- A. In accordance with Section 28 05 00, Security System General Requirements
- B. In accordance with Section 28 05 53, Identification for Electronic Safety and Security
- C. In accordance with Section 28 07 00, Security System Integration
- D. In accordance with Section 28 08 00, Security System Testing and Commissioning
- E. In accordance with Section 28 16 00, Electronic Intrusion Detection System
- F. In accordance with Section 28 16 05, Duress Monitoring System
- G. In accordance with Section 28 23 00, Video Surveillance System
- H. In accordance with Section 27 32 26, Emergency Phone System

**1.5 APPLICABLE PUBLICATIONS**

In accordance with Section 28 05 00, Security General Requirements

**1.6 SHOP DRAWINGS & EQUIPMENT SUBMITTAL**

In accordance with Section 28 05 00, Security General Requirements

**1.7 OPERATING AND MAINTENANCE MANUALS**

In accordance with Section 28 05 00, Security General Requirements.

**1.8 WARRANTY**

In accordance with Section 28 05 00, Security General Requirements

## 1.9 OWNER'S RIGHT TO USE EQUIPMENT

The Owner reserves the right to use equipment, material and services provided as part of this work prior to Acceptance of the Work, without incurring additional charges and without commencement of the Warranty period.

## 1.10 TECHNICAL REQUIREMENTS, ELECTRONIC INTRUSION DETECTION SYSTEM (EIDS)

- A. Purpose: The Electronic Intrusion Detection System is designed to monitor security alarm devices, and to report to the University's Campus Security Command Center (PSA) on the activity of security alarm devices throughout the building.
- B. Environment
  - 1. The system shall be wholly contained within the USC [site] [building]. Refer to the drawings and Bid Instructions to determine the scope limitations for this phase of work.
  - 2. Security Alarm Remote Monitoring: System security alarm and trouble signals shall be transmitted to the UPC Campus Security Command Center (PSA) via its integral Digital Alarm Communicator Transmitter, communicating over telephone lines provided by the Owner. Optionally, the Owner may elect to monitor the system through the campus LAN/WAN using TCP/IP protocols. Contractor shall coordinate with the Owner on the provision and compatibility of Owner-provided connectivity.
- C. Attributes
  - 1. General
    - a. The system shall comprise Electronic Intrusion Detection System field devices including but not limited to intrusion detectors, door position switches, and duress alarm stations, located as shown on the drawings and connected together to provide a complete and operational system.
    - b. The EIDS shall be based on a distributed system of individual point monitoring modules, access keypads and alarm control centers (ACC).
    - c. The system shall be U.L. listed for Central Station, Local and Auxiliary, and Burglary (UL Central Station and Local) applications and shall be compatible with the Owner's existing alarm receiving station.
  - 2. System Control Panel
    - a. System Software: The base panel shall come complete with the software necessary to implement every system feature and to allow for the addition of every expansion or functional module without changes or addition to the basic software.
    - b. The base control panel shall have a minimum capacity of 24 hard wired zones and the ability to accommodate up to 128 addressable devices on two addressable loops. The total capacity of the security control panel shall be 128 zones. All zones shall be fully supervised and programmable. Panel shall be complete with integral power supply and supervised battery charger, auxiliary power for powering security detection devices, integral supervised digital alarm communicator, supervised bell/siren output, and two general purpose programmable outputs which can be programmed as general purpose outputs or as the system's addressable loops.
  - 3. System Communication Bus: The system shall be complete with a standard, non-shielded, 4-conductor station wire bus for powering and communicating with remote hardwired system expansion modules and devices. For the connection of various system modules, communication bus wire runs (#18AWG) of up to 3500 ft shall be standard, and the system shall allow for an additional 3500 ft of communication bus wire for each communication bus expander added (maximum 16).

4. Voice-Assisted Status & Control: The system shall be capable of providing system status and control via any local or remote tone telephone, with the system providing system status information by voice. The system shall include a pre-recorded word library from which words can be selected to create zone labels.
5. Panel Zone Expansion: The panel shall be expandable to a maximum of 128 zones by adding standard hardwired 8 and/or 16-zone modules to the base panel, by adding up to 128 addressable detection devices to one or both of the addressable loops on the base panel, and by adding 64 wireless zones, and up to 8 wireless receivers to the four-wire communication bus. The system shall be capable of expansion using hardwired, addressable and wireless simultaneously in any combination that suits the application.
6. System Keypads: The system shall accommodate up to 16 LCD keypads which are powered from the base panel via the four-wire communications bus. LCD keypads shall have a display capacity of at least 32 alphanumeric characters with adjustable brightness and contrast. Keys shall be backlit for low light ease of use. Keypads shall include individual "Armed", "Ready" and "Trouble" indicators, three keypad-activated alarm keys, and five programmable function keys. Keypads shall be available with red bezels as required for fire systems.
7. User Codes: The system shall provide for 1,500 user codes, select table as either 4 or 6 digits. For access control, user codes shall be assignable to 1 of 64 access levels. User codes shall be assignable to one or multiple partitions.
8. Partitions: The system shall be programmable for up to 8 fully independent partitions, with each partition having its own account code. Keypads shall be assignable as partition keypads or global keypads. Each zone in the system shall be assignable to one or more partitions.
9. Scheduling: The system shall provide for 99 date schedules with 4 intervals per schedule, 4 holiday schedules with 2 years of scheduling capacity, 50 open/close suppression schedules and 16 automation schedules. All schedules shall be programmable from the LCD system keypads and by either local or remote upload/download.
10. Ground Fault Detection: The system shall include an integral ground fault detector which shall detect a single ground fault on any extended conductor in the system.
11. Supervision: Each zone in the system shall be supervised. The base panel and any remote panel with its own AC input shall be supervised for AC loss. Batteries for the base panel and all remote panels shall be supervised for low power and be short circuit-protected. Each addressable device and each wireless input device shall be supervised for its presence. The communications bus shall be supervised for low voltage and the presence of each enrolled module and keypad. Digital alarm communicators shall be supervised for telephone line trouble and failure to communicate.
12. Central Station Reporting
  - a. The system shall provide high speed 10 bps and 20 bps 1400/2300 Hz handshake, Contact ID and SIA reporting formats and shall be capable of being programmed to call up to 3 telephone numbers.
  - b. The system shall also allow communication to a pager.
  - c. The telephone numbers shall be programmable for backup dialing should the primary number fail.
  - d. The system shall be programmable for split reporting so that alarms/restorals, openings/closing and miscellaneous events can be sent to different telephone numbers.

- e. The system shall report a separate account code for each partition and for nonpartition (system) events.
  - f. The system shall provide opening/closing scheduled suppression to prevent opens and closes from being reported to the central station.
  - g. The system shall be capable of reporting all alarms, troubles, and system status information by combinations of all communication methods installed including: digital communicator, DVACS, and Cellemetry.
13. TCP/IP LAN/WAN Communications: The system shall have the ability to communicate alarm signals to a central station [include where directed by Owner] or dedicated PC (equipped with appropriate software), through a constant connection providing full supervision of the link between the panel and the TCP/IP receiver. Communication shall be via a LAN or WAN, compatible with 10BaseT and 100BaseT Ethernet TCP/IP communications.
  14. [Include where directed by Owner] System Printer: The system shall be capable of output to a serial printer installed anywhere on the communication bus, and capable of printing all system events, alarms and restorals, including the partition, date, and time of these events.
  15. False Alarm Prevention: The system shall include the following false alarm prevention features:
    - a. audible exit delay, audible exit fault
    - b. arm/disarm bell squawk
    - c. urgency on entry delay
    - d. TLM trouble and low battery trouble transmission delay
    - e. swinger shutdown programmable by zone
    - f. transmission delay by zone
    - g. police code (cross zone) transmission
    - h. opening after alarm transmission
    - i. recent close code transmission
    - j. AC failure
    - k. arming/disarming from outside the protected space using access control or wireless key
  16. Power Supply/Relay Output Modules: The system shall be capable of including up to 64 fully programmable output relays with form 'C' contacts rated 2 Amps at 30VDC. Relays shall be added in modules of four and may be located anywhere on the communication bus. Each module shall include a supervised 700mA 12VDC battery charger, and integral power supply to supply up to 2.2 Amps of auxiliary power at 12VDC to power directly connected devices or re-power the communication bus.
  17. Low Power Outputs: The system shall be capable of including up to 144 low power outputs with each output able to supply 50mA at 12 VDC. Outputs shall be added in increments of 16 and may be added anywhere on the communication bus.
  18. System Event Buffer: The system shall have a 3,000-event buffer. All events shall be printable from the system printer. The 2,800 most recent events shall be viewable on the LCD system keypad. All events shall be viewable by upload/download to a PC.
  19. System Programming



- a. Alarm Control Center (ACC): The system shall be fully programmable from the LCD keypads and shall also allow event buffer viewing at the keypads.
  - b. Remote Programming Software (RPS): Provide separate PC-based upload/download software which shall allow programming and operation from a directly connected local computer, or from a remote computer via a telephone line or TCP/IP LAN/WAN communications. Remote access shall be controlled by the Owner to prevent unauthorized access.
  - c. All system programming shall be maintained in nonvolatile memory so that programming information is retained even if all AC and battery power is removed.
20. System shall bear the following listings as necessary to meet the requirements of governing authorities:
- a. UL1610 Central Station Burglar Alarm Units
  - b. UL609 Local Burglar Alarm Units
  - c. UL365 Police Station Burglar Alarm Units
  - d. UL1635 Digital Alarm Communicator System Units

## **PART 2 PRODUCTS**

### **2.1 GENERAL**

- A. Product Acceptability: The Products section contains lists of acceptable products. If product substitutions are proposed, they must be made based upon a comparison of equivalence to the product specified. Considerations may include but shall not be limited to functional, physical, aesthetic and/or interface aspects. The Owner shall be the sole judge of whether or not a submitted substitution is deemed to be "equivalent" to that specified.

### **2.2 ELECTRONIC INTRUSION DETECTION SYSTEM**

- A. System Control Panel
  - 1. Control/Communicator Panel: Honeywell Vista-[20PUL/50PULfor wireless applications], or equal by DSC, or GE Security, with transformer, fire-rated enclosure, battery back-up, modem/TCP/IP interface, and phone line interfaces. Contractor shall confirm compatibility with Owner receiver.
  - 2. Alarm Command Center (ACC): Honeywell [6160/6139] programming keypad or equal by DSC, or GE Security, with 32-character alphanumeric display for EIDS programming and display of alarm status, with 5 dedicated keys, distinctive alarm tones, and back-lighted multi-key touchpad to match Control Panel Manufacturer.
- B. Peripheral Control Equipment
  - 1. Zone Expansion
    - a. Provide 8-Zone hard-wired alarm point expander compatible with the proposed control panel, and as required to connect alarm devices shown on the drawings.
    - b. Provide 16-Zone hard-wired alarm point expander compatible with the proposed control panel, and as required to connect alarm devices shown on the drawings.
  - 2. Control Point Output Module: Provide Output Module compatible with the proposed control panel, with 4 output relays and a 1-amp auxiliary power supply.
  - 3. Coordinate configuration requirements with the Owner and provide programming, configuration and interfaces as necessary to provide a complete and operable system.
- C. Power Supply

1. Ratings: Provide UL Listed Class II transformers and power supplies within the System Control Panel, or within an approved equipment cabinet. Plug-in transformers shall be secured onto power outlets and completely enclosed in a locked cabinet. Provide barriers as may be necessary to separate Class I from Class II power.
2. Capacity: The power supply shall be capable of powering a minimum of 125 percent of the load required at the time of acceptance (25% spare capacity).
3. Power Monitoring: The system shall monitor the loss and restoration of power. Loss and restoration of power shall be displayed at the Alarm Control Center and the PSA Central Command Center, but shall not require resetting of the system.
4. Battery Back-up: Provide battery back-up to retain functions of all electronics for a period of twenty-four (24) hours upon loss of 120VAC power.

D. Alarm Initiating Devices

1. Door Position Switch: Door Position Switches shall be furnished and installed by the Contractor. The Contractor shall align, prepare and fabricate doors and frames to accept specified door position switches. The Contractor shall be responsible for coordinating the installation so systems and hardware operate as specified.
  - a. Surface Mounted Door Switch: Interlogix/Sentrol Model 2505-A-06 or Flair Model MSS-100-23 Surface Mounted Magnetic Switch with armored cable. Route armored cable to junction box and permanently secure to box with clamp or set-screws. Use only where flush mounted devices cannot be installed.
  - b. Non-fire Rated Doors, Flush Mount
    - 1) Hollow Metal Doors: Interlogix/Sentrol Model 1076C-W or Flair Model MSS200 Concealed Magnetic Door Switch.
    - 2) Storefront Doors: Interlogix/Sentrol Model 1076C-W or Flair Model MSS200 Concealed Magnetic Door Switch.
    - 3) Wood Faced Doors: Interlogix/Sentrol Model 1277-W or Flair Model RMS-94 Concealed Magnetic Door Switch.
  - c. Fire Rated Doors
    - 1) General: Contractor shall coordinate all security hardware equipment and installation so as to maintain the Fire Rating of each specific door to the satisfaction of the local Authority Having Jurisdiction.
    - 2) Hollow Metal Doors: Interlogix/Sentrol Model 1078CW, or 2750, concealed magnetic door switch, or equal, approved by UL for use on UL classified fire doors with metal faces, rated up to 3-hours.
    - 3) Hollow Metal Doors, Hinge Switch: Stanley Model "CS" Electrical Hinge Switch, or equal by Markar products. Finish and style as directed by the Owner.
    - 4) Storefront Doors: Interlogix/Sentrol Model 1078CW Concealed Magnetic Door Switch, or equal.
    - 5) Wood Door w/Hollow Metal Frame: Interlogix/Sentrol Model 1078CW Concealed Magnetic Door Switch, with Interlogix/Sentrol Model 1835 Mini-Max Wide Gap Magnet. Magnet shall be made of rare-earth magnetic materials, and shall be of 5/8" x 1/8", cylindrical (washer) shape. Drill 1/8"-deep hole to flush mount magnet to top of door.
  - d. Gates and Roll-Up Doors: Interlogix/Sentrol Model 2205-A or Flair Model 1000, with armored cable. Route armored cable to junction box and permanently secure to box with clamp or set-screws.

2. Duress Button: Provide Interlogix/Sentrol Model 3040, or equivalent by Honeywell, locking duress button, mounted under desk or on wall. Coordinate final location with the Owner.
3. Motion Detector: Provide Area Motion Detectors designed for the area of usage [Indicate if device is to be ceiling (GE-AP669) 360 degree ,wall (GE-RCR-C), or area / degree coverage] or equal by Bosch and shall be furnished and installed by the Contractor. The Contractor shall mount and align devices to cover the area shown on the plans. The Contractor shall be responsible for coordinating the installation so systems and hardware operate as specified.

### 2.3 WIRE AND CABLE

- A. General: Cables which are not installed in conduit shall be rated for plenum use.
- B. 2-wire alarm cable: Belden 8761, West Penn D291, or as recommended by the manufacturer to insure performance.
- C. 4-wire alarm cable: Belden 9302, West Penn 3251, or as recommended by the manufacturer to insure performance.
- D. Other system cable: As recommended by the Manufacturer and approved by the Owner.
- E. Cable installed below grade shall be rated for immersion in water.

## PART 3 EXECUTION

### 3.1 GENERAL

In accordance with Section 28 05 00, Security General Requirements.

### 3.2 EQUIPMENT, RACK AND CONSOLE INSTALLATION

Mount equipment in rooms, consoles, equipment racks, and desktops in accordance with Section 28 05 00, Security General Requirements.

### 3.3 GROUNDING PROCEDURES

Provide grounding of all systems and equipment in accordance with Section 28 05 00, Security General Requirements.

### 3.4 WIRE AND CABLE INSTALLATION PRACTICES

Provide wire and cable installation in accordance with Section 28 05 00, Security General Requirements.

### 3.5 DATABASE PREPARATION, CHECKING AND ACTIVATION

- A. Provide database preparation, checking and activation for systems and equipment in accordance with Security General Requirements, Section 28 05 00.
- B. In addition, provide the following:
  1. Required System Programming:
    - a. Contractor shall research with the Owner, develop and install executive and user software required for the final acceptance of the system as specified herein and on the drawings.
    - b. Contractor shall provide the Owner with forms and instructions to facilitate the gathering and entry of user software data. Forms shall include but not be limited to information regarding time schedules, alarm points, password protection levels, and reporting schedules.

- c. Program system configuration parameters (hardware and software, zone/circuit numbers, communication parameters).
  - d. Program operational parameters such as opening/closing reports and windows, system response text (custom English) displays of events, activation of relays that drive auxiliary devices, and identifying types of zones/loops.
  - e. Program passcodes according to the authorities and functions defined by the Owner.
2. Existing Digital Alarm Communication Receiver Configuration:
- a. Contractor shall research with the Owner, and coordinate the programming of the existing Digital Alarm Communications Receiver, located in the PSA Central Command Center. The DACR is manufactured by Osborne.
  - b. Contractor shall be responsible for providing programming information to the Owner's DACR service organization, prior to the completion of the EIDS installation, and shall participate in testing of the DACR system, as a part of the Final Performance Testing.
- 3.6 START-UP RESPONSIBILITY
- Provide start-up services for all systems and equipment in accordance with Security General Requirements, Section 28 05 00.
- 3.7 SYSTEM PERFORMANCE TESTING AND ADJUSTING PROCEDURES
- A. Provide performance testing, burn-in performance period, and adjusting of all systems and equipment in accordance with Section 28 08 00
  - B. Electronic Intrusion Detection System Testing
    - 1. Test and verify the normal operation of every alarm point in all four states at each alarm panel. Test each alarm point for the alarm function by normal operation of the alarm point, i.e.: for a door position switch, open the door and so forth.
    - 2. Test each intrusion detector during its programmed secure and bypass time periods to assure that it operates by the pre-programmed schedule.
    - 3. Verify system integration schemes function automatically and correctly.
    - 4. Verify activity at the Digital Alarm Communications Receiver is designated as directed by the Owner.
- 3.8 BURN-IN PERFORMANCE PERIOD
- Provide a burn-in performance period to demonstrate the stability of the system, in accordance with Testing and Commissioning, Section 28 08 00.
- 3.9 FINAL PROCEDURES
- Perform final procedures in accordance with Section 28 05 00, Security General Requirements.

END OF SECTION

## USC GUIDELINE SECURITY SPECIFICATIONS

### SECTION 28 16 05

#### DURESS MONITORING SYSTEM (DMS)

*[Use when EIDS is not required]*

#### PART 1 GENERAL

##### 1.1 DESCRIPTION

- A. General Description: This specification section covers the furnishing and installation of a complete, low-voltage, Duress Monitoring System at the [indicate site and building] location.
- B. Contractor shall furnish and install security hardware devices, mounting brackets, power supplies, switches, control equipment, and other components of the system as shown and specified.
- C. Contractor shall 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, Electrical.
- D. General Conditions: Provide the work in accordance with Section 28 05 00, Security General Requirements.

##### 1.2 PRECEDENCE

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.

##### 1.3 GENERAL CONDITIONS

In accordance with Section 28 05 00, Security General Requirements

##### 1.4 RELATED WORK

- A. In accordance with Section 28 05 00, Security System General Requirements
- B. In accordance with Section 28 05 53, Identification for Electronic Safety and Security
- C. In accordance with Section 28 07 00, Security System Integration
- D. In accordance with Section 28 08 00, Security System Testing and Commissioning
- E. In accordance with Section 28 16 00, Electronic Intrusion Detection System
- F. In accordance with Section 28 23 00, Video Surveillance System
- G. In accordance with Section 27 32 26, Emergency Phone System

##### 1.5 APPLICABLE PUBLICATIONS

In accordance with Section 28 05 00, Security General Requirements

##### 1.6 SHOP DRAWINGS & EQUIPMENT SUBMITTAL

In accordance with Section 28 05 00, Security General Requirements

##### 1.7 OPERATING AND MAINTENANCE MANUALS

In accordance with Section 28 05 00, Security General Requirements.

##### 1.8 WARRANTY

In accordance with Section 28 05 00, Security General Requirements

## 1.9 OWNER'S RIGHT TO USE EQUIPMENT

The Owner reserves the right to use equipment, material and services provided as part of this work prior to Acceptance of the Work, without incurring additional charges and without commencement of the Warranty period.

## 1.10 TECHNICAL REQUIREMENTS, ELECTRONIC INTRUSION DETECTION SYSTEM (EIDS)

- A. Purpose: The Duress Monitoring System shall provide alarm notifications between the activated remote duress stations and the University's Campus Security Command Center (PSA). The system shall provide individual alarm points for each duress station in the building and site.
- B. Attributes
1. General
    - a. The system shall comprise duress field devices located as shown on the drawings and connected together to provide a complete and operational system.
    - b. The DMS shall be based on a distributed system of individual point monitoring modules, access keypads and alarm control centers (ACC).
    - c. The system shall be U.L. listed for Central Station, Local and Auxiliary, and Burglary (UL Central Station and Local) applications and shall be compatible with the Owner's existing alarm receiving station.
  2. System Control Panel
    - a. System Software: The base panel shall come complete with the software necessary to implement every system feature and to allow for the addition of every expansion or functional module without changes or addition to the basic software.
    - b. The base control panel shall have a minimum capacity of 24 hard wired zones and the ability to accommodate up to 128 addressable devices on two addressable loops. The total capacity of the security control panel shall be 128 zones. All zones shall be fully supervised and programmable. Panel shall be complete with integral power supply and supervised battery charger, auxiliary power for powering security detection devices, integral supervised digital alarm communicator, supervised bell/siren output, and two general purpose programmable outputs which can be programmed as general purpose outputs or as the system's addressable loops.
  3. System Communication Bus: The system shall be complete with a standard, non-shielded, 4-conductor station wire bus for powering and communicating with remote hardwired system expansion modules and devices. For the connection of various system modules, communication bus wire runs (#18AWG) of up to 3500 ft shall be standard, and the system shall allow for an additional 3500 ft of communication bus wire for each communication bus expander added (maximum 16).
  4. Voice-Assisted Status & Control: The system shall be capable of providing system status and control via any local or remote tone telephone, with the system providing system status information by voice. The system shall include a pre-recorded word library from which words can be selected to create zone labels.
  5. Panel Zone Expansion: The panel shall be expandable to a maximum of 128 zones by adding standard hardwired 8 and/or 16-zone modules to the base panel, by adding up to 128 addressable detection devices to one or both of the addressable loops on the base panel, and by adding 64 wireless zones, and up to 8 wireless receivers to the four-wire communication bus. The system shall be capable of expansion using hardwired, addressable and wireless simultaneously in any combination that suits the application.

6. System Keypads: The system shall accommodate up to 16 LCD keypads which are powered from the base panel via the four-wire communications bus. LCD keypads shall have a display capacity of at least 32 alphanumeric characters with adjustable brightness and contrast. Keys shall be backlit for low light ease of use. Keypads shall include individual "Armed", "Ready" and "Trouble" indicators, three keypad-activated alarm keys, and five programmable function keys. Keypads shall be available with red bezels as required for fire systems.
7. User Codes: The system shall provide for 1,500 user codes, select table as either 4 or 6 digits. For access control, user codes shall be assignable to 1 of 64 access levels. User codes shall be assignable to one or multiple partitions.
8. Partitions: The system shall be programmable for up to 8 fully independent partitions, with each partition having its own account code. Keypads shall be assignable as partition keypads or global keypads. Each zone in the system shall be assignable to one or more partitions.
9. Scheduling: The system shall provide for 99 date schedules with 4 intervals per schedule, 4 holiday schedules with 2 years of scheduling capacity, 50 open/close suppression schedules and 16 automation schedules. All schedules shall be programmable from the LCD system keypads and by either local or remote upload/download.
10. Ground Fault Detection: The system shall include an integral ground fault detector which shall detect a single ground fault on any extended conductor in the system.
11. Supervision: Each zone in the system shall be supervised. The base panel and any remote panel with its own AC input shall be supervised for AC loss. Batteries for the base panel and all remote panels shall be supervised for low power and be short circuit-protected. Each addressable device and each wireless input device shall be supervised for its presence. The communications bus shall be supervised for low voltage and the presence of each enrolled module and keypad. Digital alarm communicators shall be supervised for telephone line trouble and failure to communicate.
12. Central Station Reporting
  - a. The system shall provide high speed 10 bps and 20 bps 1400/2300 Hz handshake, Contact ID and SIA reporting formats and shall be capable of being programmed to call up to 3 telephone numbers.
  - b. The system shall also allow communication to a pager.
  - c. The telephone numbers shall be programmable for backup dialing should the primary number fail.
  - d. The system shall be programmable for split reporting so that alarms/restorals, openings/closing and miscellaneous events can be sent to different telephone numbers.
  - e. The system shall report a separate account code for each partition and for nonpartition (system) events.
  - f. The system shall provide opening/closing scheduled suppression to prevent opens and closes from being reported to the central station.
  - g. The system shall be capable of reporting all alarms, troubles, and system status information by combinations of all communication methods installed including: digital communicator, DVACS, and Cellemetry.
13. TCP/IP LAN/WAN Communications: The system shall have the ability to communicate alarm signals to a central station [include where directed by Owner] or dedicated PC (equipped with appropriate software), through a constant connection providing full supervision of the link between the panel and the TCP/IP receiver. Communication shall

be via a LAN or WAN, compatible with 10BaseT and 100BaseT Ethernet TCP/IP communications.

14. False Alarm Prevention: The system shall include the following false alarm prevention features:
  - a. audible exit delay, audible exit fault
  - b. arm/disarm bell squawk
  - c. urgency on entry delay
  - d. TLM trouble and low battery trouble transmission delay
  - e. swinger shutdown programmable by zone
  - f. transmission delay by zone
  - g. police code (cross zone) transmission
  - h. opening after alarm transmission
  - i. recent close code transmission
  - j. AC failure
  - k. arming/disarming from outside the protected space using access control or wireless key
15. System Event Buffer: The system shall have a 3,000-event buffer. All events shall be printable from the system printer. The 2,800 most recent events shall be viewable on the LCD system keypad. All events shall be viewable by upload/download to a PC.
16. System Programming
  - a. Alarm Control Center (ACC): The system shall be fully programmable from the LCD keypads and shall also allow event buffer viewing at the keypads.
  - b. Remote Programming Software (RPS): Provide separate PC-based upload/download software which shall allow programming and operation from a directly connected local computer, or from a remote computer via a telephone line or TCP/IP LAN/WAN communications. Remote access shall be controlled by the Owner to prevent unauthorized access.
  - c. All system programming shall be maintained in nonvolatile memory so that programming information is retained even if all AC and battery power is removed.
17. System shall bear the following listings as necessary to meet the requirements of governing authorities:
  - a. UL1610 Central Station Burglar Alarm Units
  - b. UL609 Local Burglar Alarm Units
  - c. UL365 Police Station Burglar Alarm Units
  - d. UL1635 Digital Alarm Communicator System Units

## **PART 2 PRODUCTS**

### **2.1 GENERAL**

- A. Product Acceptability: The Products section contains lists of acceptable products. If product substitutions are proposed, they must be made based upon a comparison of equivalence to the product specified. Considerations may include but shall not be limited to functional,



physical, aesthetic and/or interface aspects. The Owner shall be the sole judge of whether or not a submitted substitution is deemed to be "equivalent" to that specified.

## 2.2 ELECTRONIC INTRUSION DETECTION SYSTEM

### A. System Control Panel

1. Control/Communicator Panel: Honeywell Vista-[20PUL/50PUL for wireless applications], or equal by DSC, or GE Security, with transformer, fire-rated enclosure, battery back-up, modem/TCP/IP interface, and phone line interfaces. Contractor shall confirm compatibility with Owner receiver.
2. Alarm Command Center (ACC): Honeywell [6160/6139] programming keypad or equal by DSC, or GE Security, with 32-character alphanumeric display for EIDS programming and display of alarm status, with 5 dedicated keys, distinctive alarm tones, and back-lighted multi-key touchpad to match Control Panel Manufacturer.

### B. Peripheral Control Equipment

1. Zone Expansion
  - a. Provide 8-Zone hard-wired alarm point expander compatible with the proposed control panel, and as required to connect alarm devices shown on the drawings.
  - b. Provide 16-Zone hard-wired alarm point expander compatible with the proposed control panel, and as required to connect alarm devices shown on the drawings.
2. Control Point Output Module: Provide Output Module compatible with the proposed control panel, with 4 output relays and a 1-amp auxiliary power supply.
3. Coordinate configuration requirements with the Owner and provide programming, configuration and interfaces as necessary to provide a complete and operable system.

### C. Power Supply

1. Ratings: Provide UL Listed Class II transformers and power supplies within the System Control Panel, or within an approved equipment cabinet. Plug-in transformers shall be secured onto power outlets and completely enclosed in a locked cabinet. Provide barriers as may be necessary to separate Class I from Class II power.
2. Capacity: The power supply shall be capable of powering a minimum of 125 percent of the load required at the time of acceptance (25% spare capacity).
3. Power Monitoring: The system shall monitor the loss and restoration of power. Loss and restoration of power shall be displayed at the Alarm Control Center and the PSA Central Command Center, but shall not require resetting of the system.
4. Battery Back-up: Provide battery back-up to retain functions of all electronics for a period of twenty-four (24) hours upon loss of 120VAC power.

### D. Alarm Initiating Devices

1. Duress Button: Provide Interlogix/Sentrol Model 3040, or equivalent by Honeywell, locking duress button, mounted under desk or on wall. Coordinate final location with the Owner.

## 2.3 WIRE AND CABLE

- A. General: Cables which are not installed in conduit shall be rated for plenum use.
- B. 2-wire alarm cable: Belden 8761, West Penn D291, or as recommended by the manufacturer to insure performance.
- C. Other system cable: As recommended by the Manufacturer and approved by the Owner.
- D. Cable installed below grade shall be rated for immersion in water.

## **PART 3 EXECUTION**

### **3.1 GENERAL**

In accordance with Section 28 05 00, Security General Requirements.

### **3.2 EQUIPMENT, RACK AND CONSOLE INSTALLATION**

Mount equipment in rooms, consoles, equipment racks, and desktops in accordance with Section 28 05 00, Security General Requirements.

### **3.3 GROUNDING PROCEDURES**

Provide grounding of all systems and equipment in accordance with Section 28 05 00, Security General Requirements.

### **3.4 WIRE AND CABLE INSTALLATION PRACTICES**

Provide wire and cable installation in accordance with Section 28 05 00, Security General Requirements.

### **3.5 DATABASE PREPARATION, CHECKING AND ACTIVATION**

- A. Provide database preparation, checking and activation for systems and equipment in accordance with Security General Requirements, Section 28 05 00.
- B. In addition, provide the following:
  1. Required System Programming:
    - a. Contractor shall research with the Owner, develop and install executive and user software required for the final acceptance of the system as specified herein and on the drawings.
    - b. Contractor shall provide the Owner with forms and instructions to facilitate the gathering and entry of user software data. Forms shall include but not be limited to information regarding time schedules, alarm points, password protection levels, and reporting schedules.
    - c. Program system configuration parameters (hardware and software, zone/circuit numbers, communication parameters).
    - d. Program operational parameters such as opening/closing reports and windows, system response text (custom English) displays of events, activation of relays that drive auxiliary devices, and identifying types of zones/loops.
    - e. Program passcodes according to the authorities and functions defined by the Owner.
  2. Existing Digital Alarm Communication Receiver Configuration:
    - a. Contractor shall research with the Owner, and coordinate the programming of the existing Digital Alarm Communications Receiver, located in the PSA Central Command Center. The DACR is manufactured by Osborne.
    - b. Contractor shall be responsible for providing programming information to the Owner's DACR service organization, prior to the completion of the EIDS installation, and shall participate in testing of the DACR system, as a part of the Final Performance Testing.

### **3.6 START-UP RESPONSIBILITY**

Provide start-up services for all systems and equipment in accordance with Security General Requirements, Section 28 05 00.

### **3.7 SYSTEM PERFORMANCE TESTING AND ADJUSTING PROCEDURES**

- A. Provide performance testing, burn-in performance period, and adjusting of all systems and equipment in accordance with Section 28 08 00
- B. Duress System Testing
  - 1. Test and verify the normal operation of every alarm point in all four states at each alarm panel. Test each alarm point for the alarm function by normal operation of the alarm point.
  - 2. Verify activity at the Digital Alarm Communications Receiver is designated as directed by the Owner.

### 3.8 BURN-IN PERFORMANCE PERIOD

Provide a burn-in performance period to demonstrate the stability of the system, in accordance with Testing and Commissioning, Section 28 08 00.

### 3.9 FINAL PROCEDURES

Perform final procedures in accordance with Section 28 05 00, Security General Requirements.

END OF SECTION

## USC GUIDELINE SECURITY SPECIFICATIONS

### SECTION 28 23 00

#### VIDEO SURVEILLANCE SYSTEM

##### PART 1 GENERAL

###### 1.1 DESCRIPTION

- A. General Description: This specification section covers the furnishing and installation of a complete expansion to a low-voltage, enterprise-wide video surveillance system (VSS).
- B. Contractor shall coordinate *[and furnish]* licenses and install VSS hardware devices, mounting brackets, power supplies, servers, workstations, recorders, controls, consoles and other components of the system as shown and specified.
- C. Furnish and install special boxes, cable, connectors, wiring, and other accessories necessary to complete the system installation. Requirements shall be in accordance with the Division 26, Electrical Work.
- D. Outlets, junction boxes, pull boxes, conduit, connectors, wiring, and other accessories necessary to complete the system installation, will be provided in accordance with the projects' Division 26, Electrical Work specifications, and coordinated with VSS requirements.
- E. General Conditions: Provide the work in accordance with Section 28 05 00, Security System General Requirements.

###### 1.2 QUALIFICATIONS

Provide the work in accordance with Section 28 05 00, Security System General Requirements.

###### 1.3 GENERAL CONDITIONS

In accordance with Section 28 05 00, Security System General Requirements

###### 1.4 RELATED WORK

- A. In accordance with Section 28 05 00, Security System General Requirements
- B. In accordance with Section 28 05 53, Identification for Electronic Safety and Security
- C. In accordance with Section 28 07 00, Security System Integration
- D. In accordance with Section 28 08 00, Security System Testing and Commissioning
- E. In accordance with Section 28 16 00, Electronic Intrusion Detection System
- F. In accordance with Section 28 16 05, Duress Monitoring System
- G. In accordance with Section 28 23 00, Video Surveillance System
- H. In accordance with Section 27 32 26, Emergency Phone System.

###### 1.5 APPLICABLE PUBLICATIONS

In accordance with Section 28 05 00, Security System General Requirements

###### 1.6 PRECEDENCE

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.

###### 1.7 SHOP DRAWINGS & EQUIPMENT SUBMITTAL

In accordance with Section 28 05 00, Security System General Requirements

## 1.8 OPERATING AND MAINTENANCE MANUALS

In accordance with Section 28 05 00, Security System General Requirements, Section 01 77 00.

## 1.9 WARRANTY

In accordance with Section 28 05 00, Security System General Requirements

## 1.10 SERVICE AND MAINTENANCE

In accordance with Section 28 05 00, Security System General Requirements

## 1.11 TRAINING

In accordance with Section 28 05 00, Security System General Requirements

## 1.12 OWNER'S RIGHT TO USE EQUIPMENT

The Owner reserves the right to use equipment, material and services provided as part of this work prior to Acceptance of the Work, without incurring additional charges and without commencement of the Warranty period.

## 1.13 TECHNICAL REQUIREMENTS, VIDEO SURVEILLANCE SYSTEM

### A. General

1. The following information is provided to establish required system performance for the complete operating Video Surveillance System (VSS) system expansion to the University of Southern California (USC) system. Some of the performance requirements noted herein are supported and supplied by existing systems in concert with new equipment and software which shall be provided by the Contractor under this scope of work. Contractor shall provide equipment, wiring and software programming at all sites as necessary to provide a complete system as described herein and as shown on the drawings.
2. The VSS components provided under this scope of work shall be compatible with the existing VSS and shall function as an integral part thereof. The existing enterprise-wide network video system is manufactured by Lenel Systems International.
3. Contractor shall be responsible for providing equipment, licenses and software to achieve the specified system performance described herein and, by reference, realize absolute and seamless compatibility with the existing system.
4. Contractor shall ensure system additions and modifications provided under this scope of work have no negative effect on the existing systems and operations, and no permanent effect beyond that specified or implied by the scope of work unless otherwise noted herein.

### B. Purpose

1. The System shall provide the ability to record images received from cameras located throughout USC facilities in a digital format.
2. The System shall allow operators to view live and recorded video images in single and multiple-camera formats based on parameters requested by the user.

### C. Environment

1. The system shall be wholly contained within the [indicate site and building] facilities shown on the plans, but shall also be fully integrated with the campus enterprise video surveillance systems (EACS) at the PSA Central Command Center. Refer to the drawings and Bid Instructions to determine the scope limitations for this phase of work.
2. Video Processing and Recording Components (Network Video Recorders (NVR) shall be distributed, and located in IDF / Electrical Rooms, as shown on the drawings or as

directed by the Owner. See the drawings for details on equipment locations of this project.

3. Central Administrative Post: The video management service application is located in the PSA Central Command Center. System programming, configuration and control shall occur at this location or as directed by the Owner.
4. Building Administrative Post: Where applicable, Video Client workstations shall be located as shown on the drawings. Site surveillance, site camera configuration, and review of recorded images shall occur at this location.
5. Infrastructure and Connectivity
  - a. The video camera and processing components at each site shall utilize a combination of standard copper cable, fiber optic cable, IP or wireless transmission schemes, depending on individual site conditions.
  - b. Local Sites: The wired network cameras, video encoders, network video appliances, and Client Workstations shall reside on the building's local area network (LAN) or network segment. Recording, live viewing, switching, long-term storage, reviewing, and configuration shall be implemented over this infrastructure. Coordinate LAN/WAN requirements for this project with the Owner.
  - c. Enterprise: Local LAN networks are connected to the USC campus LAN network, to establish VSS connectivity between USC sites and the PSA Central Command Center. Coordinate LAN/WAN requirements for this project with the Owner.

#### D. Attributes

1. General
  - a. The Digital Video Management system (DVMS) is existing and is a subset of the EACS Software. Refer to Specification Section 28 13 00, Electronic Access Control Software and Section 28 07 00 Security System Integration for coordinating information.
  - b. The system shall comprise network video appliances, video clients, digital storage devices, router/switches, and ancillary equipment assembled into a fully operating system.
  - c. Field Components: Field Components shall comprise video cameras, positioning devices, lenses, camera mounts and housings, and other video system devices and wiring as described herein and shown on the drawings.
  - d. Video Processing Components: Video processing components shall comprise computer video servers, encoders / decoders, digital storage devices, computer video monitoring stations, and other video processing devices as described herein and as needed to provide the required functionality.
  - e. Quality: The initial quality/compression parameters shall be set as determined by the Engineer and the Owner at the time of commissioning. Minimum video quality shall be equivalent to 4-CIF, or the selected camera's highest supported resolution, unless otherwise approved by the Owner.
2. Integrated Digital Video Management System
  - a. The Contractor shall incorporate the following existing application software features and functionality into the new work, and configure the system and devices to make use of these and any other features offered by the application software, as required by the Owner.

- b. The VSS/EACS (Spec Section 28 13 00) shall support an integrated Digital Video Management recording solution utilizing a Network Video Recorder (NVR) appliance that provides the following features and capabilities:
  - 1) Seamless integration with the EACS
  - 2) The EACS shall support Digital Network Video Recorders manufactured by the EACS manufacturer and from third party manufacturers.
  - 3) The EACS shall support analog and IP video sources
  - 4) The Digital Video Management Software (DVMS) shall incorporate a modular architecture and be able to support an unlimited number of cameras
  - 5) The DVMS shall be able to simultaneously record and display live video and display recorded video
  - 6) The DVMS shall support both event based and continuous recording
  - 7) The DVMS shall mark all events and they shall be available for playback and or archiving at any time
  - 8) Video events shall be linked to EACS events in the EACS database and only one database shall be acceptable for this interface.
  - 9) Up to 32 simultaneous users shall be able to access any video feed from any recorder on the network.
  - 10) User defined profiles for tailored granular access to configuration and operation
  - 11) Independent camera setup for, compression rate, brightness, contrast and other factor setups.
- c. DVMS Network Interface
  - 1) The network interface shall allow remote access of the DVMS from anywhere with established connectivity on the LAN/WAN.
  - 2) The DVMS shall have the ability to playback stored video over the LAN / WAN for remote access of video images.
- d. EACS Integration
  - 1) Any alarm / event in the EACS shall have the ability to be associated with a digital video clip in real time. The DVMS shall support user-defined pre and post event recording.
  - 2) Each camera shall be configurable for a 32 alphanumeric character name and shall allow for the setup and adjustment of brightness, contrast, archiving, motion detection, Pan / Tilt / Zoom, on a per camera basis.
- e. The DVMS shall support the following configuration and customization parameters:
  - 1) Compression percentage
  - 2) Pre and Post event recording, in seconds
  - 3) Active Continuous Archiving
  - 4) Motion Detection Alarms
  - 5) Set Time Lapse Recording
  - 6) Continuous Recording Mode

3. Real Video Time Monitoring: The DVMS / IPDVMS shall allow monitoring of real time video from any Alarm Monitoring client workstation. DVMS and Camera status shall be displayed on a System Hardware Tree.
4. Matrix View: The DVMS / IPDVMS shall support an advanced Matrix View of On-line camera views. Up to 32 channels shall be able to be simultaneously displayed in the video matrix. The 32 channels shall be any combination of Live or Recorded video.
5. Pan / Tilt / Zoom Control from Alarm Monitoring: Video cameras so equipped, shall be capable of pan/tilt/zoom positioning and remote control functions. Video camera positioning and imaging signals shall be transmitted by LAN networks as described herein, to permit remote viewing and camera control "on demand" on any LAN-connected device, from any location, with appropriate software and authorization.
6. [Include only on projects approved by CAPS] Video Camera Groups / Video Camera Tours
  - a. The DVMS / IPDVMS shall support camera grouping to allow for video camera tours in the EACS Alarm Monitoring Module.
  - b. An unlimited number of camera groups shall be supported in the EACS and each camera group shall support an unlimited number of cameras. Cameras within a camera group shall span multiple digital video servers. Cameras shall have the ability to be placed into multiple camera groups.
  - c. The EACS shall provide for video camera tours that rotate live video between each of the cameras defined in the video camera group at a user defined increment. The time increment shall be user definable in whole seconds.
7. Still Image Capture / Save: During playback or monitoring of video, the System shall have the ability to create and save a still picture.
8. Export Video Clip to File: The EACS shall have to ability to save and export recorded video to a file for the purpose of sharing and reviewing video clips. The start and end times for each video segment shall be user defined.
9. Video Loss Detection: The VSS / EACS shall detect video loss from cameras and activate an alarm.
10. Automated Motion Video Searching
11. System Redundancy: System servers and network video recorders shall be equipped with RAID 5 array hard drives to allow failed hard drives to be "rebuilt" without loss of recorded information. Hard drives shall be hot swap type.

#### E. Functional Requirements

1. Video Recording Protocols: Initially, configure the system as directed by the Owner, based on the following recording protocol definitions:
  - a. Recording Modes:
    - 1) Time Lapse Mode: 1 frames per second (fps) per camera. Cameras shall be continuously recorded at this rate.
    - 2) Real Time Mode: 30 fps per camera
    - 3) Event/Alarm Mode: 15 fps per camera
  - b. Compression Codec: H.264
  - c. Compression Quality: Compression rates shall always be set at their highest quality. Automatic throttling can be used where network bandwidth is restricted, when approved by the Owner.



- d. Resolution: Cameras should be configured to deliver streams in their highest native resolution.
  - e. Motion-Based Recording Modes: Motion detection recording modes may be implemented where directed by the Owner, but assumptions on motion cannot be used to calculate storage capacity.
2. Recording and Retrieval
- a. Provide a minimum hard-disk storage capacity *[expansion when using an existing NVR]* of 30 days of recording, for cameras installed as a part of this project. Storage media shall be located in the security equipment room, communications room, security monitoring center, or where shown on the plans. Storage capacity shall be calculated based on the following parameters:
    - 1) Time Lapse Mode (1 frame per second (fps) per camera, high-quality compression): All cameras, 24-hours per day, 7-days per week, at highest native resolution, plus;
    - 2) Real-Time Mode (30fps per camera at high-quality compression): 10% of the total number of cameras, 2-hours per day, 7-days per week, at highest native resolution.
    - 3) Assume 100% motion and complexity within the viewing area at all times for storage calculations.
3. *[Insert when new NVR is provided as part of the project]* Forensic Recording: Provide a means of recording video clips for transport such as DAT, DVD or DVD-ROM, for forensic and evidentiary purposes.
4. Software routines required to accomplish the required functionality will be fully developed, installed, tested and supported by the Contractor and Manufacturer. Provide proof of manufacturer certification for any new software provided.
5. Alarm Mode
- a. One or more cameras may be associated with a controlled door or gate, or alarm monitored portal or area.
  - b. Associated cameras shall be programmed to be automatically pre-positioned and "called" into alarm mode by EACS event commands, to be displayed in full-screen view on a video workstation and recorded in "alarm/event mode".
  - c. The system shall allow an individual alarm input to initiate pre-positioning, viewing and recording sequences of two or more alarm point-associated cameras, simultaneously. When two or more cameras are simultaneously designated for event recording, they shall each be recorded in "alarm/event" mode.
6. Video Storage/Retrieval *[Insert when new NVR is provided as part of the project]*
- a. Stored video will be time/date stamped and synchronized with the EACS clock.
  - b. The system shall retrieve any stored video based on time/date parameters entered by the operator.
  - c. The system shall be capable of performing activity detection on stored video. Any recorded video channel may be selected and a zone may be selected within the view of the camera scene. The stored video can then be searched and will only display clips of video that identify motion in the selected zone.
7. Surveillance/Display Modes
- a. Cameras may be used for assessment, to view areas of concern and provide video escort functions.

- b. The system shall process video signals for primary display on video workstation display monitors. Video signals may be displayed in single or multi-view formats.
- c. Selection of display formats shall be under the control of the operators, via their local video monitoring software, video control keyboards, or by computer-controlled graphical user interfaces.
- d. Display Modes: The system shall enable one or more cameras from any combination of areas or sites to be displayed on one or more video workstations or display devices, simultaneously.
  - 1) Single Camera Display: Any individual camera may be called-up and displayed on a video workstation, and by any other properly configured computer or LAN device, with VSS monitoring software.
  - 2) Multiple Display: Up to 16 cameras may be called-up and displayed simultaneously on each video monitor with VSS monitoring software. Cameras may be called-up for multiple display without regard to their location in the system, or on the network, such that each of the 16 cameras may be from 16 different sites or areas, displayed simultaneously on a video workstation.
- e. The system shall support independently configured display modes at each video workstation or LAN device, simultaneously. Display mode configured at one video monitoring device shall not affect the others.

## **PART 2 PRODUCTS**

### **2.1 GENERAL**

Product Acceptability: The Products section contains lists of acceptable products. If product substitutions are proposed, they must be made based upon a comparison of equivalence to the product specified. Considerations may include but shall not be limited to functional, physical, aesthetic and/or interface aspects. The Owner shall be the sole judge of whether or not a submitted substitution is deemed to be "equivalent" to that specified.

### **2.2 VIDEO SURVEILLANCE (VSS) EQUIPMENT**

#### **A. General**

1. *[Insert when new NVR is provided as part of the project]* Network Video Recorder: Provide the number of NVR recorders necessary to manage and record video cameras at the project site, as shown on the drawings and as noted herein or directed by the Owner.
2. *[Insert when existing NVR is used to support the project]* Network Video Recorder (Existing): Where system expansion is integrated with an existing network recorder or workstation, provide additional recording media in the existing equipment of sufficient quantity to support the expansion.
3. Software
  - a. Provide Lenel OnGuard Video Manager, IPDVMS software NVR component, to support the required monitoring, surveillance and recording capabilities and functionality, as specified. Ensure compatibility between the NVR application and the existing DVMS application.
  - b. Camera/Video Licenses: Provide additional number of camera licenses equal to the number of cameras shown on the drawings and added throughout the course of the project.
  - c. Client Workstations: Provide Lenel OnGuard Video Viewer software to support monitoring, surveillance, and review capabilities and functionality at the client workstations.

4. Provide VSS Client Workstations where shown on the drawings and described herein.
- B. VSS Client Workstation *[Insert when new workstation is provided as part of the project separate from EACS/VSS workstation]*
1. The EACS/VSS Client Workstation(s) shall be a Dell or HP desktop computer that meets or exceeds the current Lenel specifications for a High Performance Video Client PC, with a dual AMD Radeon HD 7470 Video Card (1GB DDR3 DP/DVI) or better. Contractor shall obtain CAPS IT approval before installation.
  2. Provide Lenel approved Video Client Software.
  3. (2) 24" LED Monitors (must support 1920x1200 minimum)
  4. Audio with speakers, Multimedia keyboard with palmrest, 6-button Laser mouse and surge suppression strip
  5. 3 year limited warranty
  6. Windows 7 Professional, or other operating system approved by Lenel and the Owner.
- C. Network Video Recorder (NVR) Hardware Platform *[Insert when new NVR is provided as part of the project]*
1. The Network Video Recorder, a device for recording IP based video from IP output cameras or analog cameras that have been converted to IP output, shall consist of a PC Compatible Chassis and other specified components, as shown in the following sub sections that together create the Network Video Recorder.
  2. The NVR shall be a Dell or HP rack-mounted server class computer that meets or exceeds the current Lenel specifications for an LNVR capable of processing and recording the maximum number of camera streams required for the project, as described herein. The server shall support a minimum of nine Serial ATA hard drives. Contractor shall obtain CAPS IT approval before installation.
    - a. Dual 10/100/1000 Network Interface Cards
    - b. Configurable up to a minimum of 3 Terabyte Storage: Provide the number of drives necessary to provide the required storage, as specified herein.
    - c. Operating System: Windows 2003 Enterprise Server (or Windows Server Class Operating System currently approved by Lenel)
    - d. Virus Protection: Symantec Endpoint Antivirus
    - e. Firewall: Symantec Endpoint Firewall
    - f. Provide Lenel approved LNVR Software.
    - g. Windows 7 Professional, or other operating system approved by Lenel and the Owner.
  3. Lenel Network Recorder License: Provide One per camera
- D. Keyboard/Video/Mouse (KVM): Provide a rack-mounted KVM appliance at the equipment rack to support setup, configuration, and programming of the NVR. KVM shall include a 15" Color LCD display, at a minimum.
- E. Digital Video Encoder: Provide digital video encoders where support for analog cameras is required.
1. Axis Model 7401 – Single Camera Digital Video Server/Encoder, Motion JPEG/H.264, 704x480 Resolution (max), 30 fps @ D1, PTZ drivers, 10/100BaseT. *[Provide Blade version, for rack mounting where equipment is mounted in a standard equipment rack.]*

2. Axis Model 7404 – Four-Camera Digital Video Server/Encoder, Motion JPEG/H.264, 704x480 Resolution (max), 30 fps @ D1, PTZ drivers, 10/100BaseT. [Provide Blade version, for rack mounting where equipment is mounted in a standard equipment rack.]
3. Server Rack: [Insert when rack mounted] Provide rack/backplane, with power supply module, suitable for housing the specified digital video encoders.

F. Video Cameras

1. IP-Ready Cameras
  - a. All new cameras shall be IP-ready cameras, unless the conditions of installation or other special requirements dictate that an analog type camera must be used. Any such condition must be submitted for approval, and approved by the Owner, prior to installation.
  - b. Where analog cameras are approved and provided, a digital video encoder must be used to convert the analog video signal for distribution and use on the LAN/WAN Network.
2. Exterior Integral Dome with Pan/Tilt/Zoom Camera and Lens: [Insert when new exterior PTZ is provided as part of the project]
  - a. The unitized dome/camera assembly shall be a Pelco Spectra IV SE/IP, compatible with the IPDVMS. The unitized camera/dome assembly shall be a self-contained unit that incorporates an integral color camera, pan-and-tilt motor, zoom lens and receiver/driver.
  - b. The camera shall have a nominal diameter of 5-1/2".
  - c. The camera shall feature an advanced 1/4" CCD with a built-in complimentary color filter and 768(H) x 494(V) pixels with microlens on each pixel.
  - d. The camera shall be equipped with digital signal processing (DSP) to produce a high quality picture with a horizontal resolution of over 480 lines with a minimum illumination of 0.8 lux (f/1.6) in color mode; 0.05 lux (f/1.6) in black & white mode. The camera shall feature an infrared cut filter capable of being removed automatically upon low light threshold or manually.
  - e. The camera shall be equipped with an auto back light compensation and shall feature mask setting and level adjust capability. The camera shall be equipped with a built-in digital motion detector with mask setting and level adjustment as well. The camera shall also be equipped with an electronic sensitivity up feature to enhance camera performance in extreme low light conditions. The camera shall feature auto tracing white balance capability with a 48 section mask and level adjustment capability for accurate color reproduction.
  - f. The camera unit shall include 8 privacy zones that mask areas dynamically; the zones shall change size automatically with camera lens focal length and camera pan/tilt position. The privacy zone shall feature a supervisor override function. The camera shall feature titling for each of 8 areas, user-definable 16 character titles or preprogrammed camera position readout (North, Northeast, East, Southeast, South, Southwest, West, Northwest).
  - g. The Camera's zoom lens shall have a 1/4" format and a focal length of 3.79-83.4mm (22.01X magnification). The zoom lens shall have an auto iris and auto focus feature that shall allow manual override if the need arises. The zoom lens shall provide continuous digital zoom (10X) for a total maximum magnification of 220.1X. The minimum aperture throughout this range shall vary from a minimum of f/1.6 at the wide angle setting to f/3.0 at the telephoto lens position.

- h. The pan-and-tilt motor shall be a high-speed unit allowing 360° rotation with a tilt angle of 180°. The camera shall feature a direct drive motor assembly. The camera shall be equipped with a slip ring assembly having an optical interface and be rated for continuous operation. The Camera unit shall support digital flip technology for instant view of objects passing under the camera. The camera unit shall support continuous tilt movement through a 180° tilt range.
- i. The camera shall feature a built-in digital motion detector with a 48 section mask and level adjustment capability.
- j. The pan-and-tilt shall allow for preset sort and sequence rotation speed of 300° per second. The unitized surveillance device shall feature a minimum of 64 preset positions.
- k. The camera shall automatically sequence through the preset positions in logical programming order (sequence mode) or actual position (sort mode). The camera shall include 10 programmable scene files, each having a combination of special camera settings such as built-in digital motion detector and electronic sensitivity up. The camera shall be capable of scanning each preset position for motion at the preset position's scene, and delivering an alarm condition over a single coaxial cable or via RS-485 communications.
- l. The pan-and-tilt section shall feature automatic panning mode. The automatic panning limits and speed adjustment shall be selectable from an on-screen menu and not with mechanical or physical limit stops. The camera unit shall include a patrol feature in which a user-recorded pattern of pan, tilt and zoom settings may be replayed repeatedly.
- m. The camera shall provide a 100Base-TX network interface for live streaming to the security network. The following IP-based standards shall be supported:
  - 1) Video Encoding: H.264 base profile, MPEG-4, MJPEG
  - 2) Video Streams: 2, simultaneous
  - 3) Frame Rate: Up to 30, 25, 24, 15, 12.5, 12, 10, 8, 7.5, 6, 5, 4, 3, 2, 1 (dependent upon coding, resolution, and stream configuration)
  - 4) Available Resolutions:
    - a) 704 x 480 NTSC
    - b) 352 x 240 NTSC
  - 5) Web User Interface: Pelco Device Utility interface for viewing HTTP, requires Java Runtime Environment (JRE™)
  - 6) Supported Protocols: TCP/IP, UDP/IP (Unicast, Multicast IGMP), UPnP, DNS, DHCP, RTP, RTSP, NTP, IPv4, SNMP, QoS, HTTP, HTTPS, LDAP (client), SSH, SSL, SMTP, FTP, mDNS (Bonjour®)
  - 7) Users: 20 simultaneous using unicast; unlimited using multicast H.264 or MPEG-4 802.1x (EAP)
- n. The power source shall be 24VAC, 60Hz at 18W. POE versions are also acceptable.
- o. Camera and control receiver shall be compatible with the systems' data protocol, and shall implement the entire range of camera configuration adjustments supported by the manufacturer. Cross-manufacturer interfaces that limit this capability are not acceptable.
- p. Provide exterior cameras with sunshield, and heater/defogger, 24VAC
- q. Provide mounting bracket for conditions at each location.

3. Interior Integral Dome with Pan/Tilt/Zoom Camera and Lens [Insert when new interior camera with PTZ functions is provided as part of the project]
  - a. The unitized dome/camera assembly shall be a Pelco Mini Dome System, compatible with the IPDVMS system. The unitized camera/dome assembly shall be a self-contained unit that incorporates an integral color camera, pan-and-tilt motor, zoom lens and receiver/driver.
  - b. The camera shall have a nominal diameter of 5".
  - c. The camera shall feature an advanced 1/4" CCD with a built-in complimentary color filter and 768(H) x 494(V) pixels with microlens on each pixel.
  - d. The camera shall be equipped with digital signal processing (DSP) to produce a high quality picture with a horizontal resolution of over 470 lines with a minimum illumination of 3.0 lux (f/1.6) in color mode.
  - e. The camera shall be equipped with an auto back light compensation and shall feature mask setting and level adjust capability. The camera shall be equipped with a built-in digital motion detector with mask setting and level adjustment as well. The camera shall also be equipped with an electronic sensitivity up feature to enhance camera performance in extreme low light conditions. The camera shall feature auto tracing white balance capability with a 48 section mask and level adjustment capability for accurate color reproduction.
  - f. The Camera's zoom lens shall have a 1/4" format and a focal length of 3.79-83.4mm (22.01X magnification). The zoom lens shall have an auto iris and auto focus feature that shall allow manual override if the need arises. The zoom lens shall provide continuous digital zoom (10X optical and 8X Digital). The minimum aperture throughout this range shall vary from a minimum of f/1.6 at the wide angle setting to f/3.0 at the telephoto lens position.
  - g. The pan-and-tilt motor shall be a high-speed unit allowing 360° rotation with a tilt angle of 180°. The camera shall feature a direct drive motor assembly. The camera shall be equipped with a slip ring assembly having an optical interface and be rated for continuous operation. The Camera unit shall support digital flip technology for instant view of objects passing under the camera. The camera unit shall support continuous tilt movement through a 180° tilt range.
  - h. The pan-and-tilt shall allow for preset sort and sequence rotation speed of 140° per second Pan and 80° per second Tilt.
  - i. The unitized surveillance device shall feature a minimum of 64 preset positions.
  - j. The camera shall automatically sequence through the preset positions in logical programming order (sequence mode) or actual position (sort mode). The camera shall include 10 programmable scene files, each having a combination of special camera settings such as built-in digital motion detector and electronic sensitivity up. The camera shall be capable of scanning each preset position for motion at the preset position's scene, and delivering an alarm condition over a single coaxial cable or via RS-485 communications.
  - k. The pan-and-tilt section shall feature automatic panning mode. The automatic panning limits and speed adjustment shall be selectable from an on-screen menu and not with mechanical or physical limit stops. The camera unit shall include a patrol feature in which a user-recorded pattern of pan, tilt and zoom settings may be replayed repeatedly.
  - l. The camera shall provide a 100Base-TX network interface for live streaming to the security network. The following IP-based standards shall be supported:

- 1) Video Encoding: H.264 base profile, MPEG-4, MJPEG
  - 2) Video Streams: 2, simultaneous
  - 3) Frame Rate: Up to 30, 25, 24, 15, 12.5, 12, 10, 8, 7.5, 6, 5, 4, 3, 2, 1 (dependent upon coding, resolution, and stream configuration)
  - 4) Available Resolutions:
    - a) 704 x 480 NTSC
    - b) 352 x 240 NTSC
  - 5) Web User Interface: Pelco Device Utility interface for viewing HTTP, requires Java Runtime Environment (JRE™)
  - 6) Supported Protocols: TCP/IP, UDP/IP (Unicast, Multicast IGMP), UPnP, DNS, DHCP, RTP, RTSP, NTP, IPv4, SNMP, QoS, HTTP, HTTPS, LDAP (client), SSH, SSL, SMTP, FTP, mDNS (Bonjour®)
  - 7) Users: 20 simultaneous using unicast; unlimited using multicast H.264 or MPEG-4 802.1x (EAP)
- m. The power source shall be 24VAC, 60Hz at 18W. POE versions are also acceptable.
  - n. Camera and control receiver shall be compatible with the systems' data protocol, and shall implement the entire range of camera configuration adjustments supported by the manufacturer. Cross-manufacturer interfaces that limit this capability are not acceptable.
  - o. Provide mounting bracket for conditions at each location.
4. Interior Mini-Dome Network Fixed Position Camera:
    - a. Cameras shall be AXIS P3304 Network Camera or approved equal, high quality 1/4" progressive scan megapixel sensor, be equipped with a high quality vari-focal DC-iris, provide pictures down to 0.9 lux.
    - b. Video:
      - 1) Resolution:
        - a) The camera shall be able to deliver at least two full frame rate video streams of resolutions up to HDTV 720p over IP networks.
        - b) Supported video resolutions shall include:
          - c) 320x240
          - d) 640x480
          - e) 800x600
          - f) 1024x768
          - g) 1280x720 (HDTV 720p)
          - h) 1280x800
    - c. Encoding:
      - 1) The camera shall:
        - a) Support Motion JPEG encoding in a selectable range from 1 up to 30 frames per second in all resolutions.
        - b) Support H.264 encoding in a selectable range from 1 up to 30 frames per second in all resolutions.

- c) Be able to provide independently configured simultaneous H.264 and Motion JPEG streams.
    - d) Support both Constant Bit Rate (CBR) and Variable Bit Rate (VBR) in H.264.
    - e) Provide configurable compression levels.
    - f) Support motion estimation in H.264.
  - d. Transmission:
    - 1) The camera shall allow for video to be transported over:
      - a) HTTP (Unicast)
      - b) HTTPS (Unicast)
      - c) RTP (Unicast & Multicast)
      - d) RTP over RTSP (Unicast)
      - e) RTP over RTSP over HTTP (Unicast)
    - 2) The camera shall support Quality of Service (QoS) to be able to prioritize traffic.
  - e. Image control:
    - 1) Incorporate Automatic and Manual White Balance
    - 2) Be equipped with an electronic shutter and support automatic and manually defined exposure zones operating in the range 1/6 and 1/24.500 second.
    - 3) Be equipped with Wide Dynamic Range functionality.
    - 4) Provide Back Light Compensation.
    - 5) Allow for rotation of the image in steps of 90°.
  - f. Power requirements:
    - 1) Power over Ethernet according to IEEE 802.3af - Class 2
    - 2) 4.9 - 5.1 VDC, max 4.7 W
  - g. Cameras shall connect to new Power over Ethernet (PoE) compliant network switch indicated on drawings.
5. Exterior Dome Network Fixed Position Camera:
- a. Cameras shall be AXIS P3384-VE Network Camera or approved equal, high quality progressive scan 1.3 megapixel sensor, support WDR with Lightfinder, and shall provide images down to 0.5 lux in day mode and 0.08 lux in night mode.
  - b. The camera shall:
    - 1) Provide video streams in 1280x960 (maximum) resolution at 30 frames per second using H.264 or Motion JPEG.
    - 2) Equipped with Day/Night functionality and remote zoom and focus capabilities.
    - 3) Operate on an open source; Linux-based platform, and including a built-in web server.
    - 4) Equipped with a slot for SD/SDHC memory card expansion.
    - 5) Tamper resistant body.
  - c. Hardware:



- 1) Use a high quality IR-sensitive 1/3" progressive scan CMOS megapixel sensor.
  - 2) Equipped with a removable IR-cut filter, providing so-called day/night functionality.
  - 3) Equipped with a high quality 3-9mm vari-focal DC-iris lens providing remote zoom and focus functionality.
  - 4) Provide pictures down to 0.5 lux while in day mode (with IR-filter in use) and down to 0.08 lux while in night mode (with IR-filter removed).
- d. Video Resolution:
- 1) The camera shall be able to deliver at least two individually configurable full frame rate video streams of resolutions up to 1280 x 960 pixels, over IP networks.
  - 2) Supported video resolutions shall include:
    - a) 320x240
    - b) 640x480
    - c) 800x600
    - d) 1024x768
    - e) 1280x720
    - f) 1280x960
- e. Encoding:
- 1) Support Motion JPEG encoding in a selectable range from 1 up to 30 frames per second in all resolutions.
  - 2) Support H.264 encoding in a selectable range from 1 up to 30 frames per second in all resolutions.
  - 3) Provide independently configured simultaneous H.264 and Motion JPEG streams.
  - 4) Support both Constant Bit Rate (CBR) and Variable Bit Rate (VBR) in H.264.
  - 5) Provide configurable compression levels.
  - 6) Support motion estimation in H.264.
- f. Supported Protocols shall include IPv4/v6, HTTP, HTTPS, QoS Layer 3 DiffServ, FTP, SMTP, Bonjour, SNMPv1-3, DNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, and DHCP.
- 1) The camera shall allow for video to be transported over:
  - 2) The camera shall support Quality of Service (QoS) to be able to prioritize traffic.
- g. Image control:
- 1) The camera shall incorporate Automatic and Manual White Balance and an electronic shutter operating at 1/29500 to 2 seconds (with Lightfinder).
  - 2) The camera shall provide Wide Dynamic Range and backlight compensation with automatic and definable exposure zones.
6. Camera Lenses (Provision for lens changes):

- a. Contractor shall include provision and installation of one (1) lens change per camera where necessary to provide the required field of view. Exchanged lenses shall remain the property of the Contractor.
  - b. Where lenses are integral to the camera package, this provision includes a complete camera exchange to provide the appropriate lens. Cameras removed shall remain the property of the Contractor.
- G. Camera Enclosures
  - 1. Provide enclosure for each camera. Submit enclosure and mounting hardware configuration to the Owner for approval prior to installation.
  - 2. Ancillary hardware shall be provided by contractor if required, and shall be compatible with and comparable in strength to other attached hardware.
- H. Camera Enclosure Mounting Hardware
  - 1. Provision for mounting hardware: Contractor shall include provision and installation of miscellaneous hardware and mounting extensions at each camera location to provide acceptable viewing performance.
  - 2. Ancillary Hardware shall be provided by the Contractor, if required, and shall be compatible with and comparable in strength to other attached hardware.
  - 3. Provide wall mount, pendent mount, or ceiling mount as required by each location.
- I. Camera Power Supply (CPS)
  - 1. POE Cameras: Cameras with direct IP compatibility shall be compatible with Power over Ethernet (POE) standards, and will utilize POE power from the network switch. Contractor shall coordinate power provisions with the University.
  - 2. Indoor, Wall Mount for fixed cameras: Provide Altronix Model ALTV2400 series 24VAC, UL Listed Power Supply, or equal. Power supply shall have individually fused protected outputs. Provide 3.5 Amp/4-output, 12.5 Amp/8-output, 25 Amp/16-output, or 25 Amp/32-output models, based on the requirements of the installation. Provide sufficient camera power supplies to increase the system capacity at each location by 50% of the final device capacity required under this contract.
  - 3. Indoor, Wall Mount Pan/Tilt/Zoom: Provide Pelco WSC1-4 series or equal, 24VAC, UL Listed Power Supply. Power supply shall have individually fused protected outputs. Provide 12.5 Amp/16-output, 25 Amp/16-output, or 25 Amp/32-output models, based on the requirements of the installation. Provide sufficient camera power supplies to increase the system capacity at each location by 50% of the final device capacity required under this contract.
  - 4. Multi-Circuit, Outdoor: Provide Altronix Model WPTV2400 series, or equal, 24VAC, UL Listed Power Supply, in NEMA 4 enclosure, for outdoor mounting. Power supply shall have individually fused protected outputs. Provide 7.0 Amp/4-output, or 12.5 Amp/8-output, models, based on the requirements of the installation, or as shown on the drawings.
  - 5. Ancillary Hardware shall be provided by the Contractor, if required, and shall be compatible with and comparable in strength to other attached hardware.
- J. Camera Power Supply (CPS)
  - 1. Indoor, Wall Mount: Provide Altronix Model ALTV2400 series 24VAC, UL Listed Power Supply, or equal by camera manufacturer. Power supply shall have individually fuse protected outputs. Provide 3.5 Amp/4-output, 12.5 Amp/8-output, 25 Amp/16-output, or 25 Amp/32-output models, based on the requirements of the installation. Provide

sufficient camera power supplies to increase the system capacity at each location by 50% of the final device capacity required under this contract.

2. Indoor, Rack Mount: Provide Altronix Model R24 series or equal, 24VAC, UL Listed Power Supply, for rack mounting. Power supply shall have individually fuse protected outputs. Provide 12.5 Amp/16-output, 25 Amp/16-output, or 25 Amp/32-output models, based on the requirements of the installation, [or as shown on the drawings]. Provide sufficient camera power supplies to increase the system capacity at each location by 50% of the final device capacity required under this contract.
3. Multi-Circuit, Outdoor: Provide Altronix Model WPTV2400 series, or equal by camera manufacturer, 24VAC, UL Listed Power Supply, in Nema 4 enclosure, for outdoor mounting. Power supply shall have individually fuse protected outputs. Provide 7.0 Amp/4-output, or 12.5 Amp/8-output, models, based on the requirements of the installation, [or as shown on the drawings].
4. Pelco power supplies for PTZ cameras shall be utilized.

#### K. Uninterruptable Power Supply

1. Provide APC UPS 1500VA USP and Serial Rack Mount Power Supply at each NVR installed as a part of this project.
  - a. Nominal Voltage 120VAC
  - b. Output Power Capacity 980 Watts / 1440 VA
  - c. Efficiency at Full Load 95.00%
  - d. Output Frequency (sync to mains) 57 – 63 Hz for 60 Hz nominal input
  - e. Sine Wave Waveform Type
  - f. Output Connection shall have (6) NEMA 5-15R receptacles
  - g. Nominal Input shall be 120VAC
  - h. Nominal Input Frequency shall be 50/60 Hz Auto sensing
  - i. Input voltage shall be 82 – 144 VAC
  - j. Battery shall be maintenance-free sealed Lead-Acid with suspended electrolyte in a leakproof enclosure
  - k. Communications shall be via RS-232 DB-9 connector and USB
  - l. Equipment shall have LED status display with load and battery bar-graphs with specific display for On Line, On Battery, Replace Battery and Overload conditions
2. Provide rack mounting hardware for mounting in equipment racks
  - a. Equipment shall not exceed 3.50 inches in height (2 RU)
  - b. Equipment shall not exceed 18 inches in depth
  - c. Equipment shall not exceed 63 lbs in weight.

#### L. Wiring

1. General: Cables that are not installed in conduit shall be rated for plenum use.
2. Video:
  - a. Analog Cameras, Interior or Protected Wiring: For cameras less than 750 feet from equipment rack, provide Connect-Air Wire & Cable part number WSECCOMP-2817 consisting of (2) 18AWG unshielded conductors for camera power, RG-59 video coax, and a 4pr. CAT5E component. No acceptable equal.

- b. IP Cameras, Interior or Protected Wiring: For cameras 100 meters or less from the applicable network switch, provide 23 AWG, 4-pair, plenum-rated Augmented Category 6A (CAT6A) cable. Provide Belden part number 10GX13, or equal approved by the Owner.
- 3. Data, Pan/Tilt/Zoom Control: Belden 5441FE, 2 Pair Shielded 20AWG, or equal.
- 4. Exposed Camera Wiring: Wiring between camera enclosures and their respective 'J' Box shall be in "Sealtite" flexible conduit. Sealtite shall be firmly affixed to 'J' Box cover plate and camera enclosure. Refer to camera details.
- 5. Other cable and cable/interface combinations must be pre-approved by both the manufacturer and the Owner, prior to installation.

### **PART 3 EXECUTION**

#### **3.1 GENERAL**

In accordance with Section 28 05 00, Security System General Requirements.

#### **3.2 SYSTEM CONFIGURATION:**

- A. Camera recording and display configurations shall be arranged via a combination of the Video Server, Network Video Recorders, Video Monitoring Workstations, and LAN/Wireless LAN network.
- B. Contractor shall coordinate with the Owner to determine the required pre-programmed surveillance and event-initiated configurations.

#### **3.3 SECURITY SYSTEM INTEGRATION**

Provide Access Control system integration equipment, software and programming, in accordance with Section 28 05 00, Security System General Requirements.

#### **3.4 EQUIPMENT, RACK AND CONSOLE INSTALLATION**

In accordance with Section 28 05 00, Security System General Requirements.

#### **3.5 GROUNDING PROCEDURES**

Provide grounding of all systems and equipment in accordance with Section 28 05 00, Security System General Requirements.

#### **3.6 WIRE AND CABLE INSTALLATION PRACTICES**

Provide wire and cable installation in accordance with Section 28 05 00, Security System General Requirements.

#### **3.7 DATABASE PREPARATION, CHECKING, AND ACTIVATION**

Provide database preparation, checking and activation for systems and equipment in accordance with Security System General Requirements, Section 28 05 00.

#### **3.8 START-UP RESPONSIBILITY**

Provide start-up services for all systems and equipment in accordance with Security System General Requirements, Section 28 05 00.

#### **3.9 PRELIMINARY INSPECTION AND TESTING**

Provide preliminary inspection and testing services for systems and equipment in accordance with Testing and Commissioning, Section 28 08 00.

#### **3.10 SYSTEM PERFORMANCE TESTING AND ADJUSTING PROCEDURES**

- A. Provide performance testing, burn-in, and adjusting of systems and equipment in accordance with Testing and Commissioning, Section 28 08 00.
- B. VSS Performance Testing
  - 1. Demonstrate acceptable picture quality and camera views on each camera.
  - 2. Demonstrate acceptable picture quality on each video monitoring workstation, and display devices accessible over the Wireless LAN.
  - 3. Demonstrate no negative effects on of video image is observed while Pan-Tilt-Zoom cameras are being repositioned.
  - 4. Demonstrate switching, recording and playback functions for the video server, and digital video recorders.
  - 5. Demonstrate camera positioning functionality, on pan/tilt/zoom cameras, throughout the entire range of possible camera positions.
  - 6. Ensure primary views are acceptable. Demonstrate the view obtained by each pre-programmed camera position.
  - 7. Demonstrate automatic event-initiated recording sequences, including camera pre-positioning, where applicable.

### 3.11 BURN-IN PERFORMANCE PERIOD

Provide a burn-in performance period to demonstrate the stability of the system, in accordance with Testing and Commissioning, Section 28 08 00.

### 3.12 COMMISSIONING AND VALIDATION

- A. Provide commissioning and validation services to prove and improve the effectiveness of the system, in accordance with Testing and Commissioning, Section 28 08 00.
- B. Coordinate with the Owner, or the Owner's representative, for the provision of these services.

### 3.13 FINAL PROCEDURES

Perform final procedures in accordance with Section 28 05 00, Access Control General Requirements.

END OF SECTION