

PART 6 – TECHNICAL STANDARDS

**PART 6: TECHNICAL STANDARDS**

075200 – Low Slope Roofing

275100 – Distributed Audio-Visual Communication – Emergency Call Box

281300 – Access Control

282300 – Video Surveillance

**PART 6 – TECHNICAL STANDARDS – SECTION 075200****SECTION 075200 - LOW-SLOPE ROOFING**

## 1. GENERAL

- A. Owner Project Requirements: see the ***Roof Systems and Roof-related Systems*** section of ***Part 5: Owner's Building Construction Requirements*** of this ***College Design Standards*** document for additional information related to low-slope roofing.
- B. The roofing installation includes the following materials:
  - 1. Two-ply, modified bituminous roofing.
  - 2. Roofing insulation.
  - 3. SBS Base Sheet.
  - 4. SBS Cap Sheet.
  - 5. Walkways.
- C. Performance Requirements
  - 1. General: Install a watertight, modified bituminous membrane roofing and base flashing system with compatible components that will not permit the passage of liquid water and will withstand wind loads, thermally induced movement, and exposure to weather without failure. On low slope roofs of slopes greater than 2 inches per foot, all felt plies shall be back nailed. The system shall consist of four plies of roofing felts alternately placed, overlapped and saturated with hot asphalt bitumen. Gravel surfacing to be set in hot asphalt. Steep roofing asphalt shall conform to ASTM D-312.
  - 2. FM Listing: Provide modified bituminous membrane, base flashings, and component materials that meet requirements of FM-4450 and FM-4470 as part of a roofing system and that are listed in FM's "Approval Guide" for Class-1 or noncombustible construction, as applicable. Identify materials with FM markings.
  - 3. Roofing system shall comply with the following:
    - a. Fire/Windstorm Classification: Class-1A-690
    - b. Hail Resistance Rating: MH
  - 4. Roofing System Design: Provide a roofing system that complies with roofing system manufacturer's written design instructions.
- D. Warranty
  - 1. The roofing system shall be covered by a 20 year Total System, No Dollar Limit (NDL) Warranty and must include all flashings and sheet-metal work. All materials and workmanship are to be fully guaranteed by the roofing manufacturer issuing the warranty. All materials must be manufactured by the manufacturer who is to supply the warranty. Any materials that are not made by the Roofing Materials Manufacturer but submitted for approval must be accompanied by a letter from the Roofing Materials Manufacturer issuing the 20 year NDL warranty, stating that this material is suitable for use with their system and fully covered under their 20 year NDL warranty.
  - 2. Insulation materials shall be considered an integral component of the roofing system, shall be furnished or approved by the roofing system manufacturer and shall be covered fully by the roofing system warranty.

## 2. PRODUCTS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Firestone Building Products or comparable product by one of the following:
  - 1. SBS-Modified Bituminous Roofing System:

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- a. Siplast Roofing Systems
  - b. Tremco Incorporated
  - 2. Polyisocyanurate Board Insulation:
    - a. CertainTeed Corp.
    - b. Atlas Insulation Co.
  - 3. Rubber Walkpad Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Roof Gard Pads by Humane Equipment Company.
    - b. Permagard Rubber Roof Protection Pads by Evans Product Company.
- B. SBS-Modified Bitumen Sheets**
- 1. SBS-Modified Bituminous Sheet, Base Surfaced: SBS-modified asphalt sheet, smooth surfaced, dusted with fine parting agent on both sides; suitable for application method specified; manufacturer's standard thickness and weight; for use and of reinforcing type as follows:
    - a. Use: Base ply of 2-ply, modified bituminous membrane roofing.
    - b. Reinforcing: Glass-fiber mesh or non-woven glass-fiber mat.
  - 2. SBS FR-Modified Bituminous Sheet, Mineral Surfaced: SBS-modified asphalt sheet, with continuous layer of mineral granules factory applied to top exposed surface; suitable for application method specified; with physical properties and for use with reinforcing type and granule color as follows:
    - a. Use: Finish ply of 2-ply, modified bituminous membrane roofing and base flashing.
    - b. Reinforcing: Non-woven polyester with glass fiber reinforcing in machine direction.
    - c. Granule Color: White, high albedo.
- C. Auxiliary Membrane Materials**
- 1. General: Furnish auxiliary materials recommended by roofing system manufacturer for intended use and compatible with SBS-modified bituminous roofing.
    - a. Furnish liquid-type auxiliary materials that meet VOC limits of authorities having jurisdiction.
  - 2. Asphalt Primer: ASTM-D-41.
  - 3. Roofing Asphalt: ASTM-D-312, Type-IV.
  - 4. Roofing Asphalt: ASTM-D-312, Type-IV, as recommended by modified bituminous membrane manufacturer.
  - 5. Asphalt Roofing Cement: ASTM-D-4586, SBS modified asbestos free, of consistency required by roofing system manufacturer for application.
  - 6. Mastic Sealant: Polyisobutylene, plain or modified bituminous, non-hardening, non-migrating, non-skinning, and non-drying.
  - 7. Fasteners: Factory-coated steel fasteners complying with corrosion-resistance provisions of FM-4470; designed for fastening base flashings and acceptable to roofing system manufacturer.
  - 8. Roofing Granules: Ceramic-coated roofing granules, No.-11 screen size with 100 percent passing No.-8 (2.36-mm) sieve and 98 percent of mass retained on No.- 40 (0.425-mm) sieve.
    - a. Color: White.

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9. Glass-Fiber Fabric: Woven glass cloth, treated with asphalt; complying with ASTM-D-1668, Type-1.
10. Miscellaneous Accessories: Provide miscellaneous accessories recommended by roofing system manufacturer for intended use.

**D. Walkways**

1. Walkway Pads: Reinforced asphaltic composition pads with slip-resisting mineral-granule surface, manufactured as a traffic pad for foot traffic and acceptable to roofing system manufacturer, 3/4 inch thick, minimum.
  - a. Pad Size: 36x48 inches
2. Adjustable Pedestal Pavers
  - a. Description: Concrete pavers mounted on adjustable supports.
  - b. Basis-of-design: Hanover Glacier White Precast Paver.
    - Size: Nominal 12 x 12 x 1-1/2.
  - c. Basis-of-design: Hanover Elevator System of adjustable supports

**E. Insulation Materials**

1. General: Provide preformed, roofing insulation boards that comply with requirements, selected from manufacturer's standard sizes.
  - a. Provide preformed, tapered insulation boards as needed for sloping to drain. Fabricate with the following taper:
    - 1/4 inch per 12 inches (1:48),
    - As indicated on Drawings.
  - b. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.
2. Polyisocyanurate Board Insulation: Rigid, cellular polyisocyanurate thermal insulation with core formed by using HCFCs as blowing agents complying with ASTM-C-1289-02 with an LTTR R-Value of: 30 and a thickness of 5" : classified by facer type as follows:
  - a. Facer Type: Type-II, felt or glass-fiber mat on both major surfaces.

**F. Insulation Accessories**

1. General: Furnish roofing insulation accessories recommended by roof system manufacturer for intended use and compatible with roofing material.
2. Cover Board: Factory primed, glass-fiber faced gypsum sheathing (Dens-Deck by Georgia-Pacific or approved equal) complying with ASTM-E-136, & E 84, 1/2 inch thick.

**G. Exclusions (reserved)****3. EXECUTION**

- A. Install modified bituminous membrane roofing system according to roofing system manufacturer's written instructions and applicable recommendations of NRCA/ARMA's "Quality Control Recommendations for Polymer Modified Bitumen Roofing."
- B. Install roofing system according to applicable specification plates of NRCA's "The NRCA Roofing and Waterproofing Manual."
- C. All low slope roofing systems shall include insulation. The majority of the insulating value shall be accomplished with the necessary thickness of flat poly-isocyanurate boards. Where necessary, roof slope shall be developed with tapered perlite board. Insulation material installed between the roof deck and the roof ply shall be compatible with the roof ply material and asphalt bitumen binder or other adhesive used in the roofing system. Organic insulation

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material shall not be used under built-up roofs. In all cases a minimum 1/2" cover board **must** be installed over the Isocyanurate insulation. Perlite and wood fiber are acceptable cover board materials. For new buildings the insulation value of the roof area envelope is to be a minimum of R-30 for low-slope roofs. Coordinate with College to determine the actual target R-value. For roof replacements/renovations on older buildings, a lower "R" value will be considered. The first ply of insulation systems over metal decks and wood decks shall be mechanically fastened using steel fasteners acceptable to the manufacturer furnishing guarantee of roofing system. Insulation shall be applied in several layers, with the joints staggered, in accordance with the manufacturer's recommendations. Insulation shall also be installed in accordance with Factory Mutual System Class 120 wind uplift guidelines.

- D. Flashing is part of the roofing system and shall meet requirements of manufacturer furnishing roofing system. Where roof meets a parapet or adjacent building wall, the base flashing shall extend up the wall at least 8 inches, but generally not more than 14 inches unless necessary to be consistent with existing conditions or design requirements. If flashing height is greater than 14 inches, a 2 piece flashing system may be required. Other than base flashing - metal flashing, including expansion joint flashing, shall be in accordance with SMACNA Standards and the NRCA Roofing and Waterproofing Manual and fully covered under the 20 year 'NDL' warranty.
- E. Pitch pockets shall be avoided. Where that is not possible, pitch pockets shall be filled with a pourable urethane sealer. Roof penetrations will be flashed with preformed flexible flashing, using clamps and tents, unless the penetration is such a complex shape that
- F. a pitch pocket is required.
- G. All parapet walls must be covered with a metal coping cap over a "peel and stick" type modified bitumen membrane and any necessary wood blocking/nailers, etc.
- H. Roof drains shall be provided with shallow sumps, gravel stops, and minimum 4.0 pound lead flashing in accordance with the NRCA Roofing and Waterproofing Manual and the International Plumbing Code. Roof drains shall be located at the low points, and crickets must be provided between drains in structurally formed valleys and around any structure impeding the flow of water in the drain field to assure positive water flow to the drains.
- I. Roof drainage patterns should be designed to locate roof drains at the mid-points between columns and beams. Overflow scuppers should be provided through perimeter parapet walls, or overflow relief drains should be provided at roof drain locations, to relieve storm water build-up caused by clogged roof drains.
- J. Splash blocks shall be provided at all ground discharge points from exterior downspouts, or downspouts may discharge directly into a storm drainage systems.

## **SECTION 275100 - DISTRIBUTED AUDIO-VISUAL COMMUNICATION - EMERGENCY CALL BOX**

### **PART 1 - GENERAL**

#### **1.1 SUMMARY**

- A. Section includes requirements for emergency call box units.

### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Ramtel – No Exceptions

#### **2.2 EXISTING SYSTEMS**

- A. The emergency call box units provided under the scope of this project shall be completely integrated with the existing systems.

#### **2.3 EMERGENCY CALL BOX**

##### **A. General**

- 1 The Emergency Call Box shall consist of an outdoor-rated, vandal resistant and ADA-compliant hands-free speakerphone communications device with a stainless steel faceplate and metal buttons.
- 2 The Emergency Call Box shall have one red anodized aluminum tactile button labeled "EMERGENCY" and one 0.375" diameter red light emitting diode (LED) labeled "LIGHT ON INDICATES CALL RECEIVED". The unit shall be programmable from a remote location and have a two number dialing capability, reverting to the second number if the first is busy or does not respond. The unit shall be totally hands-free on both sides after connection is initiated at site or by attendant. The unit shall be phone line powered, requiring no outside power source or battery back-up. DIP switch programming, push to talk devices, and devices requiring external power are not acceptable. The unit shall have a dedicated communication line.

##### **B. Construction**

- 1 Chassis, back box and face plate shall be constructed of stainless steel.
- 2 Faceplate shall be 12 gauge #4 brushed stainless steel measuring 9.5" W x 11.75" H.
- 3 Unit shall weigh approximately 8 lbs.
- 4 Signage shall be constructed of cast metal with lettering and Braille raised approximately 3/32" for ADA compliance.
- 5 Word "EMERGENCY" and button shall be red.
- 6 Push button and switch shall be a single assembly rated for 1,000,000 cycles.
- 7 Speaker and microphone shall be protected by non-ferrous metal screen to provide a barrier against vandalism, rain and snow.

##### **C. Features**

- 1 Unit shall be capable of operating on standard phone lines or analog PBX extensions.
- 2 Unit shall dial at approximately 10 tones per second.
- 3 Output sound level shall be greater than 80 dB at one meter for normal conversation.
- 4 All programming shall be stored in non-volatile EEPROM memory.
- 5 Button shall provide tactile feedback.
- 6 Unit shall be programmable from a remote telephone via keypad entry.
- 7 Call timer shall be programmable from 1 to 4320 minutes.
- 8 LED for the hearing impaired shall illuminate to indicate when calling party may speak (when receiving party is silent).
- 9 Unit shall be programmable with two different telephone numbers of up to 18 digits each including pauses. If first number does not answer or is busy, unit



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- 2 One dedicated, twisted-shielded communication pair shall provide a minimum of 24VDC and 20mA while off hook.
- F. Model
- 1 The emergency call box shall be a Ramtel model RR-733
- G. Options
- 1 Contractor shall provide custom silk screening of the Owner's logo and the words "Montgomery College" on each emergency call box faceplate. The specified manufacturer has the College design template.
  - 2 For indoor installations Contractor shall provide flush mount bezel produced by the call box manufacturer.

**2.4 WALKWAY LED**

- A. Walkway LED devices are required only in special conditions and may not be required on the project. Coordinate with the College to determine whether or not there is a need, and on all aspects of the items below.
- B. Provide walkway LED illumination for indoor wall mounted call boxes with technical features as follows:
- 1 Electrical:
    - a. 1W LED powered by 120V primary, 3W 350mA non-dimmable integral driver.
    - b. Input Current: 350mA
    - c. Input Voltage: 4V DC
    - d. Power Consumption: 1W
  - 2 Dimming: Dimmable with remote driver (not included). Consult factory.
  - 3 Weight: 0.99lbs (0.45kg).
  - 4 Material: 303 stainless steel and polycarbonate lens.
  - 5 Mounting: Mounts to standard 4" (102mm) octagonal box (1-1/2" (38mm) deep minimum) with flush mounted tamper proof screws.
  - 6 Approval: Dry locations. Approved to UL standards by CSA/US.
- C. Manufactured unit shall be MP Lighting L21 Walkway LED or approved equal.

**2.5 2.5 EMERGENCY CALL BOX TOWER MOUNT**

- A. Illumination
- 1 The tower mount has three (3) different lights.
  - 2 Sodium Vapor Blue Light - A high intensity 50 watt light illuminates immediate area around the tower. The blue light is continuously lit.
  - 3 Strobe Light - A one million candle power strobe housed in a blue Fresnel Lexan polycarbonate lens is provided. The strobe flashes continuously when the emergency call button is pushed and shuts off when the calling party hangs up.
  - 4 Phone Panel Light - A five (5) watt fluorescent light illuminates the emergency call box face plate.
- B. Construction
- 1 0.25" thick non-rusting, non-magnetic stainless steel
  - 2 Dimensions - 9' x 11" sq.
  - 3 Weight - 175 lbs.
  - 4 Mounting - Four (4) 5/8" x 16" J-Bolts cast into a concrete footer.
  - 5 Color - Coordinate with Owner
  - 6 Finish - Powder Coat
  - 7 Graphics - "EMERGENCY" on all four sides
  - 8 Graphics Color - Coordinate with Owner
  - 9 Power - 120 VAC
- C. Model
- 1 The emergency call box tower mount shall be a Ramtel model PLC-8
- D. Options



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- 1 Contractor shall provide the optional internal heating unit
- 2 Contractor shall provide top-mount camera arm. Installed by Owner.

**PART 3 - EXECUTION****3.1 INTERCOMMUNICATION SYSTEMS****A. Installation:**

- 1 The Contractor shall install all system components including Owner furnished equipment, and appurtenances in accordance with the manufacturer's instructions, ANSI C2 and as shown, and shall furnish all necessary connectors, terminators, interconnections, services, and adjustments required for a complete and operable emergency communications system. College will perform crossconnect to PBX to provide dial tone.

**B. Tamper Resistant Substations:**

- 1 The Contractor shall locate emergency call boxes where shown on the drawings. Provide tamper resistant center post torx screws for mounting the emergency call box units to the tower mounts.

**PART 4 - SYSTEM PROGRAMMING**

- 4.1 The College programs PBX, the vendor is responsible for programming RamTel unit per college direction.

END OF SECTION 275100

**PART 6 – TECHNICAL STANDARDS – SECTION 281300****SECTION 281300 – ACCESS CONTROL****PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section includes access control devices to be connected to the Security Management System
- B. (SMS).
- C. Access Control:
  - 1 Regulating access through doors, gates, traffic-control bollards and others access controls as specified in drawing documents.
  - 2 Anti-passback where required.
  - 3 Surge and tamper protection.
  - 4 Secondary alarm annunciator.
  - 5 Card readers.
  - 6 Biometric identity verification equipment.
  - 7 Push-button switches.
  - 8 RS-232 ASCII Interface.
  - 9 Reporting.

**PART 2 - PRODUCTS****2.1 MANUFACTURERS**

- A. Security Management System Software
  - 1 GE Security Facility Commander
- B. Security Management System Field Hardware
  - 1 GE Security ACULX16 Network Intelligent Controller – No Exception
  - 2 GE Security Remote Reader Electronics – No Exception
- C. Card Reader
  - 1 HID Thin Line II Proximity Card Reader – No Exception
  - 2 HID Mini Prox Reader

**2.2 FACILITY COMMANDER ENTERPRISE EDITION SECURITY MANAGEMENT PLATFORM**

- A. Security devices and hardware shall be integrated with the Owner's existing Security Management system (SMS). The SMS server is located in the main MDF room of the Computer Science Center located on the Montgomery College, Rockville, MD campus. Security devices and hardware provided under this project shall communicate with the SMS server via the Owner's proprietary MC F-Net network. Network Intelligent Controllers shall be terminated at the Owner furnished, Contractor (by others) installed MC F-Net switches.
- B. The Contractor is responsible for providing all software licenses required to complete this work.

**2.3 NETWORK INTELLIGENT CONTROLLER**

- A. General:
  - 1 The Networked Intelligent Controller (NIC) shall be a microprocessor-based device, which utilizes a 32-bit processor and a 32-bit bus structure. The controller shall have a minimum clock speed of 90 MHz, and shall be provided with at least 16 Mbytes of battery backed dynamic RAM. The controller shall feature a direct LAN/WAN connection to the controller bus structure in addition to two RS-232 or RS-485 connections, all of which should be designed for use in communication with the ACAM server. The communication architecture of the NIC shall be such that in the event that the primary communication channel to the ACAM server is lost, the unit shall be capable of automatically switching to a secondary communication channel using one of the host RS-232 or RS-485 connections,

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- and if required shall be able to establish communications via dial-up modem.
- 2 The NIC shall be provided with a parallel printer port, which will enable it to print transaction data during loss of communication with the ACAM server. The NIC shall be capable of dynamically allocating its memory between database information and transaction history, which shall be stored if the controller has lost communication with the ACAM server. Such transaction history shall be automatically uploaded to the ACAM server once communication has been restored. In its maximum configuration, the NIC shall be capable of storing 250,000 cardholders, and its memory utilization shall be such that if storing database information for 10,000 cardholders, it shall also be capable of storing 500,000 transactions.
  - 3 The NIC shall support the monitoring and control of 16 card readers, with or without keypads. It shall also be provided with at least 12 five-state, fully supervised and fully configurable input points, and at least 12 fully configurable auxiliary output control relays mounted on the main circuit board.
  - 4 Each controller must also be capable of expansion, by external Remote Input Modules (RIMs) and/or Remote Relay Modules (RRMs), to support a combination of up to 172 fully configurable five-state supervised input points or 156 output relays per NIC depending on configuration.
  - 5 Each NIC shall be provided with a UL Listed uninterruptible power supply (UPS) mounted within the NIC enclosure. It shall provide sufficient battery backup to sustain complete operational effectiveness including Remote Reader Electronic (RRE) modules, card readers, electric locks (fail secure), RIMs and RRM's for a minimum of four [eight] hours of normal operation.
  - 6 Each NIC shall utilize on-board self-diagnostic LEDs, removable terminal strips and a popin/pop-out circuit board.
  - 7 Each NIC in addition to its on-board LAN/WAN connection shall support RS-232 and multidrop RS-485 communication topologies. Provision of external LAN terminal server devices that are connected through serial communications to the NIC are not acceptable.
  - 8 Each NIC shall support RS-485 bi-directional communication paths (dual multi-drop paths back to ACAM file server) with no additional hardware or firmware required.
  - 9 Each NIC shall be supplied with all specified options available, including a locking enclosure with a tamper switch.
  - 10 Each NIC shall be capable of reporting the following alarm conditions to the ACAM file server:
    - a. enclosure door tamper
    - b. primary power failure
    - c. low battery conditions
    - d. loss of communications
    - e. all access control violations
  - 11 The Network Intelligent Controller shall be a GE Security ACULX 16

**2.4 REMOTE READER ELECTRONIC MODULES****A. General**

- 1 The Remote Reader Electronic (RRE) modules shall be provided to support all card readers, door contact switches, request-to-exit devices and electric locks. The RRE modules shall support all industry standard card reader technologies (magnetic stripe, Wiegand, bar code, barium ferrite, and proximity) as well as keypads and compatible biometric devices. These modules shall be available in configurations suitable to support the connection of one, two or four card devices as required.
- 2 Each RRE module shall support five-state supervised input points, output relays, and shall provide power outputs of 5-VDC, 12-VDC and 24-VDC output

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at 500-Ma to power card readers, biometric devices, request to exit (REX) devices and door strikes. Each RRE module shall be capable of being powered by the on-board UPS of a NIC to avoid the need for power supplies and 115-volt outlets to be located near controlled doors. Each RRE shall also be capable of being powered by a local 24-VDC UPS where required.

- 3 RRE modules shall utilize on-board self-diagnostic LEDs, removable terminal strips and popin/pop-out circuit boards.
- 4 RRE modules shall be supplied with all specified options available, including an enclosure with an enclosure tamper switch.
- 5 Quantity and location of RRE modules shall be as specified in Contract Documents and drawings.

**2.5 ACULX 16 NETWORK INTELLIGENT CONTROLLER POWER SUPPLY**

- A. The ACULX 16 requires a power supply/charger that transforms 120 VAC to 27.5 VDC. The Contractor shall provide the ACU-8APWR power supply/charger assembly to power the ACULX 16 and the supporting RREs. The ACU-8APWR becomes an uninterruptible power supply when stand-by batteries are connected. It has a special power limiting circuit that allows the batteries to be charged. The batteries are protected with an automatic resetting circuit breaker and diode for over current and accidental reversed battery hookup. Float charging means faster recovery time for the batteries. There is no switch over or voltage drop when power fails. Contractor shall size batteries of 8 hours of backup power with a connected load.

**2.6 ACCESS CONTROL POWER SUPPLY**

- A. Electrified locksets shall be powered from a power supply that is exclusively for electrified locks. The power supply shall provide eight (8) fused protected Fail Secure and/or Fail Safe 24VDC 10 Amps outputs. Power supply shall be a filtered, electronically regulated power source with a built in charger. The power supply shall be provided with sealed gel type batteries for backup power. In the event primary power fails, the power supply shall automatic switch-over to standby battery power, and back when primary power is restored. The transfer to and from backup power shall not cause other electrical anomalies such as false alarms loss of communication etcetera. The power supply shall be provided with thermal and short circuit protection with auto reset, fused battery protection, AC input and DC output LED indicators, and AC power and low battery supervision relays (Form "C", SPDT).
- B. Each 24 VDC power supply shall be supplied with a minimum of two 12 VDC 7 AH rechargeable batteries for standby power operation. If necessary, additional batteries shall be supplied by the Contractor to meet a four (4) hour standby time.
- C. All power supplies shall be labeled with permanent labels for their intended purpose and input and output voltage. AC ground shall have continuity to both the mounting panel and the housing. If necessary, the Contractor shall provide grounding straps from the mounting board to the housing.
- D. Power Supply shall feature a fire alarm disconnect. The fire alarm disconnect can be latch or nonlatching and is individually selectable for any or all of the 8 outputs. The fire alarm disconnect can be either Normally Open (NO) or Normally Closed (NC).
- E. Acceptable equipment shall be Altronix Power Supply AL1024ULACM or equivalent.

**2.7 CARD READERS**

- A. Proximity Card Readers
  - 1 Provide surface mounting style 125 KHz proximity card readers suitable for wall or US 2-S single-gang box mounting, and for mounting configurations as shown on the project plans.
  - 2 The reader shall be capable of reading access control data in standard Wiegand formats

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- up to 84 bits in length from any HID Proximity card or equivalent, outputting the data in one of the following configurations:
- a. The card reader shall output credential data in compliance with the SIA AC-01Wiegand standard, compatible with all standard access control systems.
  - b. The card reader shall output credential data using a Clock and Data interface, and be compatible with systems requiring a magnetic stripe reader.
- 3 The reader shall be capable of outputting a periodic reader supervision message at a configurable time interval, enabling the host system to signal an alarm condition based on the absence of this message.
  - 4 The Proximity card reader shall provide the ability to change operational features in the field through the use of a factory-programmed command card. Command card operational programming options shall include:
    - a. Reader beeps and flashes green on a card read, LED normally red, single line control of LED.
    - b. Reader flashes green on a card read, LED normally red, single line control of LED.
    - c. Reader beeps on a card read, LED normally red, single line control of LED.
    - c. Beeper and LED are controlled by host only, LED normally red, single line control of LED.
    - d. Reader beeps and flashes green on a card read, LED normally off, red and green LED's controlled individually.
    - e. Reader flashes green on a card read, LED normally off, red and green LED's controlled individually.
    - f. Reader beeps on a card read, LED normally off, red and green LED's controlled individually.
    - g. Beeper and LED are controlled by host only, LED normally off, red and green LED controlled individually
    - h. controlled individually
    - i. Change from Wiegand to Mag Stripe output format
    - j. Change from Mag Stripe to Wiegand output format
    - k. Reset to Factory Defaults
  - 5 Proximity card readers shall provide the following programmable audio/visual indication:
    - a. A piezoelectric sounder shall provide an audible tone upon successful power up/self test, good card read, or whenever the beeper control line is asserted by the host.
    - b. A bi-color, red/green LED shall light upon successful power up/self test, good card read, or whenever the LED control line(s) are asserted by the host.
    - c. The reader shall have individual control lines for the sounder, and for red and green LED indication. When the LED control lines are asserted simultaneously, an amber LED indication will occur.
  - 6 The reader shall have a configurable hold input, which when asserted shall either buffer a single card read or disable the reader, until the line is released. This input may be used for special applications or with loop detectors.
  - 7 The reader shall require that a card, once read, must be removed from the RF field for one second before it will be read again, to prevent multiple reads from a single card presentation and anti-passback errors.
  - 8 Proximity card readers shall meet the following physical specifications:
    - a. Dimensions: 4.70 x 3.0 x 0.68" (11.9 x 7.6 x 1.7 cm)
    - b. Weight: 3.3.oz (94 g)
    - c. Material: UL94 Polycarbonate
    - d. Two-part design with separate reader body and cover.
    - e. Color: Black, Gray, White or Beige as approved by the project architect.
  - 9 Proximity card readers shall meet the following electrical specifications:

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- a. Operating voltage: 5– 16 VDC, reverse voltage protected. Linear power supply recommended.
- b. Current requirements: (average/peak) 20/115mA @ 12 VDC
- 10 Proximity card readers shall meet the following environmental specifications:
  - a. Operating temperature: -22 to 150 degrees F (-30 to 65 degrees C)
  - b. Operating humidity: 0% to 95% relative humidity non-condensing
  - c. Weatherized design suitable to withstand harsh environments The reader shall be of potted, polycarbonate material, sealed to a NEMA rating of 4X (IP55).
- 11 Proximity card reader cabling requirements shall be:
  - a. Cable distance: Wiegand: 500 feet (150m); Clock & Data: 50 feet (15m)
  - b. Cable type: 5-conductor #22 AWG w/overall shield. Additional conductors will be required for 2-line LED control, beeper, hold, or card present functions.
  - c. Standard reader termination: 18" (.5m) cable pigtail
- 12 Warranty of Proximity card readers shall be lifetime against defects in materials and workmanship.
- 13 Proximity card reader shall be HID Corporation Model Thinline II.
- B. Proximity Card Reader (Mullion Mount)
  - 1 Provide surface mounting style 125 KHz proximity card readers suitable for door or window mullion mounting, and for minimal space mounting configurations as shown on the project plans.
  - 2 The reader shall be capable of reading access control data in standard Wiegand formats up to 84 bits in length from any HID Proximity card or equivalent, outputting the data in one of the following configurations:
    - a. The card reader shall output credential data in compliance with the SIA AC-01 Wiegand standard, compatible with all standard access control systems.
    - b. The card reader shall output credential data using a Clock and Data interface, and be compatible with systems requiring a magnetic stripe reader.
  - 3 The reader shall be capable of outputting a periodic reader supervision message at a configurable time interval, enabling the host system to signal an alarm condition based on the absence of this message.
  - 4 The Proximity card reader shall provide the ability to change operational features in the field through the use of a factory-programmed command card. Command card operational programming options shall include:
    - a. Reader beeps and flashes green on a card read, LED normally red, single line control of LED.
    - b. Reader flashes green on a card read, LED normally red, single line control of LED.
    - c. Reader beeps on a card read, LED normally red, single line control of LED.
    - d. Beeper and LED are controlled by host only, LED normally red, single line control of LED.
    - e. Reader beeps and flashes green on a card read, LED normally off, red and green LED's controlled individually.
    - f. Reader flashes green on a card read, LED normally off, red and green LED's controlled individually.
    - g. Reader beeps on a card read, LED normally off, red and green LED's controlled individually.
    - h. Beeper and LED are controlled by host only, LED normally off, red and green LED controlled individually
    - i. Change from Wiegand to Mag Stripe output format
    - j. Change from Mag Stripe to Wiegand output format
    - k. Reset to Factory Defaults

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- 5 Proximity card readers shall provide the following programmable audio/visual indication:
  - a. A piezoelectric sounder shall provide an audible tone upon successful power up/self test, good card read, or whenever the beeper control line is asserted by the host.
  - b. A bi-color, red/green LED shall light upon successful power up/self test, good card read, or whenever the LED control line(s) are asserted by the host.
  - c. The reader shall have individual control lines for the sounder, and for red and green LED indication. When the LED control lines are asserted simultaneously, an amber LED indication will occur.
- 6 The reader shall have a configurable hold input, which when asserted shall either buffer a single card read or disable the reader, until the line is released. This input may be used for special applications or with loop detectors.
- 7 The reader shall require that a card, once read, must be removed from the RF field for one second before it will be read again, to prevent multiple reads from a single card presentation and anti-passback errors.
- 8 Typical proximity card read range shall be up to:
  - a. 5.5" (14 cm) using HID Proxcard II card.
  - b. 5" (12.5 cm) using HID ISOProx or DuoProx cards
  - c. 2" (5 cm) using HID ProxKey II key fob
  - d. 2.5" (6.25 cm) using HID Microprox Tag
  - e. 5" (12.5 cm) using HID iCLASS Prox
  - f. 2" (5.0 cm) using HID Prox/Wiegand Card
- 9 Proximity card readers shall meet the following physical specifications:
  - a. Dimensions: 6.0 x 1.7 x 1.0" (15.2 x 4.3 x 2.54cm)
  - b. Weight:
    - (i) Terminal Strip: 3.5 oz (99 gm)
    - (ii) Pigtail: 3.8 oz (108 gm)
  - c. Material: UL94 Polycarbonate
  - d. Two-part design with separate reader body and cover.
  - e. Color: Black, Gray, White or Beige as approved by the project architect.
- 10 Proximity card readers shall meet the following electrical specifications:
  - a. Operating voltage: 5 – 16 VDC, reverse voltage protected.  
Linear power supply recommended.
  - b. Current requirements: (average/peak)  
20/110mA @ 12 VDC
- 11 c. Proximity card readers shall meet the following certifications:
  - a. UL 294
  - b. Canada/UL 294
  - c. FCC Certification
  - d. Canada Radio Certification
  - e. EU and CB Scheme  
Electrical Safety
  - f. EU – R&TTE Directive
  - g. CE Mark (Europe)
  - h. C-Tick (Australia)
  - i. New Zealand
  - j. Taiwan
  - k. Korea
  - l. China
- 12 Proximity card readers shall meet the following environmental specifications:
  - a. Operating temperature: -22 to 150 degrees F (-30 to 65 degrees C)
  - b. Operating humidity: 0% to 95% relative humidity non-condensing
  - c. Weatherized design suitable to withstand harsh environments The

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reader shall be of potted, polycarbonate material, sealed to a NEMA rating of 4X (IP55).

- 13 Proximity card reader cabling requirements shall be:
  - a. Cable distance: Wiegand: 500 feet (150m); Clock & Data: 50 feet (15m)
  - b. Cable type: 5-conductor #22 AWG w/overall shield. Additional conductors will be required for 2-line LED control, beeper, hold, or card present functions
  - c. Standard reader termination: 18" (.5m) cable pigtail
  - d. Optional reader termination: 10 screw terminals located under reader cover.
- 14 Warranty of Proximity card readers shall be lifetime against defects in materials and workmanship.
- 15 Proximity card reader shall be HID Corporation MiniProx, base P/N 5365 (Wiegand) and 5368 Clock and Data)

**2.8 LINE SUPERVISION**

- A. Communications between the host computer and the data gathering panels shall be protected against compromise. The system shall detect substitution of resistance or electrical potential, substitution of like equipment, and introduction of synthesized signals. Protective circuits (alarm inputs) shall be protected between the data gathering panel and the sensing devices (door contacts, motion detectors, etc.). Each circuit shall be supervised by end or line resistors located at the sensing device. The system shall detect resistance changes and report alarm and trouble signals at designated values defined by the system manufacturer. The system shall register a minimum of four (4) states: normal, alarm, trouble open (cut), and trouble closed (shorted). Trouble signals shall be displayed to the operator in a format readily identifiable by the operator as a supervisory condition.

**2.9 SYSTEM SENSORS AND RELATED EQUIPMENT**

- A. The EECS (Electronic Entry Control System) and related Equipment provided by the Contractor shall meet or exceed the following performer specifications:
- B. Request To Exit Detectors:
  - 1 The electrified door hardware provided by the Division 8 Door Hardware Contractor shall feature an integrated request to exit device. Electrified door hardware shall be installed by the Division 8 Door Hardware Contractor. The Security Contractor is responsible for performing final terminations to the EECS.
- C. Magnetic Contacts
  - 1 Recessed Single Pole Double Throw Door Contact
    - a. The door contact shall contain a hermetically sealed magnetic reed switch. The reed shall be potted in the contact housing with a polyurethane based compound. Contact and magnet housing shall snap-lock into a 25.4 mm (1 in) diameter hole. Housing shall be molded of flame retardant abs plastic. Color of housings shall be off-white, grey or mahogany brown. Choice of color to depend on door decor. The contact shall contain a single pole double throw (SPDT) switch with an open or closed loop. Contacts and magnets shall be treated with a thin coat of RTV silicone to hold the contact and magnet in place. Card reader controlled doors, biased and recessed perimeter door contacts, shall be GE model # 1078 or equivalent.

**PART 3 - EXECUTION****3.1 GENERAL**

- A. The Contractor shall install all system components and appurtenances in accordance with the manufacturers' instructions, ANSI C2, and shall furnish all necessary interconnections, services, and adjustments required for a complete and operable system as specified. Control signals, communications, and data transmission lines grounding shall be installed as necessary to preclude ground loops, noise, and surges



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- from affecting system operation. Equipment, materials, installation, workmanship, inspection, and testing shall be in accordance with manufacturers' recommendations and as modified herein.
- B. Consult the manufacturers' installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation. Refer to the Riser/Connection diagram for all schematic system installation/termination/wiring data.
  - C. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., sensors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.

**3.2 CURRENT SITE CONDITIONS**

- A. The Contractor shall visit the site and verify that site conditions are in agreement with the design package. The Contractor shall report all changes to the site or conditions which will affect performance of the system to the Owner in a report as defined in paragraph Group II Technical Data Package. The Contractor shall not take any corrective action without written permission from the Owner.

**3.3 EXAMINATION**

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

**3.4 PREPARATION**

- A. Comply with recommendations in SIA CP-01.
- B. Comply with EIA/TIA-606, "Administration Standard for the Telecommunications Infrastructure of Commercial Buildings."
- C. Obtain detailed Project planning forms from manufacturer of access-control system; develop custom forms to suit Project. Fill in all data available from Project plans and specifications and publish as Project planning documents for review and approval. All forms shall be completed in accordance with specified timelines outlines in Group Technical Data Packages in Section 280500.
  - 1 Record setup data for control station and workstations.
  - 2 For each Location, record setup of Controller features and access requirements.
  - 3 Access Lists
  - 4 Propose start and stop times for time zones and holidays, and match up access levels for doors.
  - 5 Set up groups, facility codes, linking, and list inputs and outputs for each Controller.
  - 6 Assign action message names and compose messages.
  - 7 Set up alarms. Establish interlocks between alarms, intruder detection, and video surveillance features.
  - 8 Prepare and install alarm graphic maps.
  - 9 Develop user-defined fields.
  - 10 Develop screen layout formats.
  - 11 Propose setups for guard tours and key control.
  - 12 Discuss badge layout options; design badges.
  - 13 Complete system diagnostics and operation verification.
  - 14 Prepare a specific plan for system testing, startup, and demonstration (see the Testing section for requirements).
  - 15 Develop acceptance test concept and, on approval, develop specifics of the test.

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- 16 Develop cable and asset management system details; input data from construction documents. Include system schematics and Visio Technical Drawings.
- 17 Develop data gathering panel matrices that conform to Section 280500.
- D. In meetings with Architect and Owner, present Project planning documents and review, adjust, and prepare final setup documents. Use final documents to set up system software.
- E. All Programming and access lists are submitted, reviewed, and accomplished before any devices are terminated and/or tested.

END OF SECTION 281300

**PART 6 – TECHNICAL STANDARDS – SECTION 282300****SECTION 282300 – VIDEO SURVEILLANCE****PART 1 GENERAL****1.1 SUMMARY**

- A. This Section includes video management system which consists of cameras, data transmission wiring, and a control station with its associated equipment.
- B. The video surveillance system shall be integrated with monitoring and control system specified in Division 28 Sections “Common Work Results for Electronic Security”, “Intrusion Detection”, and “Access Control” which specifies systems integration.

**PART 2 PRODUCTS****2.1 MANUFACTURERS**

- A. The following are acceptable manufacturers of electronic security system products as specified in this specification section. Any proposed product from a different manufacturer is subject to the review procedures in Section 1.05 in this specification.
  - 1. Closed Circuit Television:
    - a. Mobotix
  - 2. Video Recording and Storage:
    - a. Network Attached Storage (NAS) appliance - Owner Provided, Owner Installed

**2.2 VIDEO SURVEILLANCE SYSTEM**

- A. The Contractor shall configure the Color CCTV system as specified and shown on the Contract Documents and Drawings. All distances shown are approximate and shall be verified by the Contractor.
- B. The system shall include all interior and exterior housings, mounts, connectors, adapters, and terminations necessary for the interconnection of the video surveillance system. The Contractor shall also supply and install all cabling necessary to interconnect the video equipment installed in the Security Operations Center.
  - 1. The new video system shall consist of all (CMOS) Cameras, Network Attached Storage (Owner Provided, Contractor Installed), and network transmission devices, necessary to integrate with the Owner’s existing Video Head-End Equipment.
  - 2. The Video System shall provide operator interface, interaction, control of cameras. The cameras shall continuously view selected locations and/or display operator selections.
- C. Computer Software
  - 1. Video management software is provided by Manufacturer at no additional charge.
  - 2. Contractor is responsible for installing and configuring video management software.

**2.3 360° CAMERAS**

- A. The 360° Camera shall meet or exceed the following specifications:
  - 1. Lenses L11(hemispheric)
  - 2. Sensitivity Color: 1 lux (t-1/60s), 0.05 lux (t=1/1s) B/W: 0.1 lux (t-1/60s), 0.005 lux (t-1/1s)
  - 3. Sensor ½” CMOS, progressive scan
  - 4. Max. Image Resolution Color: 2048 x 1536 (3 MEGA) Black/White: 1280 x 960 (MEGA)
  - 5. Image Format Free image format selection (from 160 x 120 to 2040 x 1536); with L11: PTZ view, Quad view, panorama broad view image, double panorama view, panorama focus with 3 views
  - 6. Max Frame Rate VGA: 25 fps, TV-PAL: 18 fps, MEGA 8 fps, 3 (M-JPEG) (Live/Recording) MEGA: 4 fps
  - 7. Video Stream (MxPEG) VGA: 30 fps, TV-PAL: 30 fps, MEGA: 30 fps, 3 (Live/Recording)

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- MEGA: 20 fps
8. Image Compression MxPEG, M-JPEG, JPEG, H.263 (only Video-VoIP)
  9. Internal DVR MicroSD slot (camera-internal video recording up to 32GB)
  10. External Storage Directly on NAS and PC/Server without additional recording software
  11. Software (Inclusive) Video management software MxEasy, Control room software MxControlCenter
  12. Image Processing Backlight compensation, automatic white balance, image distortion correction (panorama image correction included), video sensor (Motion Detection)
  13. Virtual PTZ Digital Pan/Tilt/Zoom, continuous 8x zoom
  14. Alarm/Events Triggering of events by integrated multiple-window motion detection, temperature sensor, notification over email, FTP, IP telephony (VoIP, SIP), visual/acoustic alarm, pre-and post alarm images
  15. Audio Integrated microphone and speaker, lip-synchronous audio, two-way speaker, audio recording
  16. Interfaces Ethernet 10/100, USB, MxBus
  17. Video Phone VoIP, SIP, two-way speaker, remote control via DTMF signaling, event notification
  18. Security User-/Group management, HTTPS/SSL, IP Address filter, IEEE 802.1x, intrusion detection, digital image signature
  19. Certificates EMC (EN50121-4, EN55022, EN55024, EN61000-6-2, FCC part 15B, AS.NZS3548)
  20. Power Supply Power over Ethernet (802.3af): PoE class variable depending on operating mode; power consumption; typ. 3W; with PoE switch/MOBOTIX PoE – Adapter COLLEGE PROVIDES POE ETHERNET SWITCH
  21. Operating Conditions IP65 (DIN EN 60529), -30 to +60 °C (-22 to +140 °F)
  22. Dimensions n x H: 16 x 5 cm, weight: ca. 450 g
  23. Standard Delivery Housing (high resistance composites – PBT-PC), white, incl. 360° lens, mounting parts, allen wrench patch cable – 50cm, manual, software, 4 GB Micro SD (except Basic)
- B. 360° Camera shall be the Q24 Hemispheric camera by Mobotix, or Owner approved equal.
  - C. The Contractor shall provide camera mounts and mounting hardware as described in the Contract Documents.
  - D. Contractor shall coordinate all camera views with the Owner prior to procuring cameras and camera lenses. Contractor responsible for performing all calculations necessary to provide optimal camera images in accordance with Owner's guidance. All camera images must be verified by the Owner or Owner's representative prior to final adjustment.

**2.4 SINGLE VIEW FIXED DOME CAMERA**

- A. The Single View Fixed Dome Camera shall meet or exceed the following specifications:
  1. Lenses 22 to 135 mm format, Horizontal angle 90° to 15°
  2. Sensitivity Color: 1 lux (t=1/60s), 0.05 lux (t=1/1s) B/W: 0.1 lux (t=1/60s), 0.005 lux (t=1/1s)
  3. Sensor ½" CMOS, progressive scan
  4. Max. Image Resolution Color: 2048 x 1536 (3 MEGA) Black/White: 1280 x 960 (MEGA)
  5. Image Format 2048 x 1536, 1280 x 960, 1024 x 768, 800 x 600, 768 x 576 (D1), 704 x 576 (TV-PAL), 640 x 480, 384 x 288, 352 x 288, 320 x 240, 160 x 120; free image format selection (e.g. 1000 x 200 for skyline)
  6. Max Frame Rate VGA: 25 fps, TV-PAL: 18 fps, MEGA 8 fps, (M-JPEG) (Live/Recording) 3MEGA: 4 fps
  7. Video Stream (MxPEG) VGA: 30 fps, TV-PAL: 30 fps, MEGA: 30 fps, (Live/Recording) 3MEGA: 20 fps
  8. Image Compression MxPEG, M-JPEG, JPEG, H.263 (only Video-VoIP)
  9. Internal DVR MicroSD slot (camera-internal video recording up to 32GB)
  10. External Storage Directly on NAS and PC/Server without additional recording software

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11. Software (Inclusive) Video management software MxEasy, Control room software MxControlCenter
  12. Image Processing Backlight compensation, automatic white balance, image distortion correction
  13. Virtual PTZ Digital Pan/Tilt/Zoom, continuous 8x zoom Alarm/Events Triggering of events by integrated multiple-window motion detection, temperature sensor, notification over email, FTP, IP telephony (VoIP, SIP), visual/acoustic alarm, pre-and post alarm images
  14. Audio Optional via ExtI/O, lip-synchronous audio, two-way speaker, audio recording, video VoIP supported
  15. Interfaces Ethernet 10/100, USB, MxBus
  16. Video Phone VoIP, SIP, two-way speaker, remote control via DTMF signaling, event notification
  17. Security User-/Group management, HTTPS/SSL, IP address filter, IEEE 802.1x, intrusion detection, digital image signature
  18. Certificates EMC (EN50121-4, EN55022, EN55024, EN61000-6-2, FCC part 15B, AS.NZS3548)
  19. Power Supply Power over Ethernet (802.3af): PoE class variable depending on operating mode; power consumption; typ. 3W; with PoE switch/MOBOTIX PoE – Adapter.  
COLLEGE PROVIDES POE ETHERNET SWITCH
  20. Operating Conditions IP65 (DIN EN 60529), -30 to +60 °C (-22 to +140 °F)
  21. Dimensions n x H: 16 x 8.6 cm, weight: ca. 350 g
  22. Standard Delivery Housing (high-resistance composites – PBT), white, shockproof polycarbonate dome (transparent), free choice of lenses, mounting parts, allen wrench, patch cable – 50cm, manual, software, 4 GB Micro SD (except Basic)
- B. Fixed Dome Camera shall be the D24 MonoDome by Mobotix, or Owner approved equal.
- C. The Contractor shall provide camera mounts and mounting hardware as described in the Contract Documents.
- D. Contractor shall coordinate all camera views with the Owner prior to procuring cameras and camera lenses. Contractor responsible for performing all calculations necessary to provide optimal camera images in accordance with Owner's guidance. All camera images must be verified by the Owner or Owner's representative prior to final adjustment.

**2.5 DUAL VIEW FIXED DOME CAMERA**

- A. The Dual View Fixed Dome Camera shall meet or exceed the following specifications:
1. Lenses 22 to 135mm format Horizontal angle 90° to 15 °
  2. Sensitivity Color: 1 lux (t=1/60s), 0.05 lux (t=1/1s) B/W: 0.1 lux (t=1/60s), 0.005 lux (t=1/1s)
  3. Sensors 2 x ½" CMOS, progressive scan
  4. Max. Image Resolution Color: 2048 x 1536 (3 MEGA) Black/White: 1280 x 960 (MEGA)
  5. Image Format 2048 x 1536, 1280 x 960, 1024 x 768, 800 x 600, 768 x 576 (D1), 704 x 576 (TV-PAL), 640 x 480, 384 x 288, 352 x 288, 320 x 240, 160 x 120; free image format selection (e.g. 1000 x 200 for skyline)
  6. Max Frame Rate VGA: 16 fps, TV-PAL: 12 fps, MEGA 6 fps, (M-JPEG) (Live/Recording) 3MEGA: 4 fps
  7. Video Stream (MxPEG) VGA: 30 fps, TV-PAL: 24 fps, MEGA: 14 fps, (Live/Recording) 3MEGA: 10 fps
  8. Image Compression MxPEG, M-JPEG, JPEG, H.263 (only Video-VoIP)
  9. Internal DVR SD slot (up to 32GB), 16GB internal (Sec-R16)
  10. External Storage Directly on NAS and PC/Server without additional recording software
  11. Software (Inclusive) Video management software MxEasy, Control room software MxControlCenter
  12. Image Processing Backlight compensation, automatic white balance, image distortion correction, video sensor (motion detection)
  13. Virtual PTZ Digital Pan/Tilt/Zoom, continuous 8x zoom

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14. Alarm/Events Triggering of events by integrated multiple-window motion detection, temperature sensor, notification over email, FTP, IP telephony (VoIP, SIP), visual/acoustic alarm, pre-and post alarm images
  15. Audio Integrated microphone and speaker, Line-In/Line-Out, lip-synchronous audio, two-way speaker, audio recording
  16. Interfaces Ethernet 10/100, ISDN, RS232, 3 x In, 1 x Out
  17. Video Phone VoIP, SIP, two-way speaker, remote control via DTMF signaling, event notification
  18. Security User-/Group management, HTTPS/SSL, IP address filter, IEEE 802.1x, intrusion detection, digital image signature
  19. Certificates EMC (EN55022, EN55024, EN61000-6-2, FCC part 15B, AS.NZS3548)
  20. Power Supply Power over Ethernet (802.3af; Class 0), Netpower- Adapter, typ. 4W.  
COLLEGE PROVIDES POE ETHERNET SWITCH
  21. Operating Conditions IP54/IP65 (without/with wall mount), -30 to +60 °C (-22 to +140 °F)
  22. Dimensions n x H: 20.1 x 11 cm, weight: ca. 650 g
  23. Standard Delivery Housing (high-resistance composites – PBT), white, shockproof polycarbonate dome (transparent), free choice of lenses, mounting parts, allen wrench, patch cable – 50cm, manual, software, 4 GB Micro SD (except Basic)
- B. Dual View Fixed Dome Camera shall be the D12 DualDome by Mobotix, or Owner approved equal.
  - C. The Contractor shall provide camera mounts and mounting hardware as described in the Contract Documents.
  - D. Contractor shall coordinate all camera views with the Owner prior to procuring cameras and camera lenses. Contractor responsible for performing all calculations necessary to provide optimal camera images in accordance with Owner's guidance. All camera images must be verified by the Owner or Owner's representative prior to final adjustment.

**PART 3- EXECUTION****3.1 GENERAL**

- A. The Contractor shall install all system components and appurtenances in accordance with the manufacturer's instructions, ANSI C2, and shall furnish all necessary interconnections, services, and adjustments required for a complete and operable system as specified. Control signals, communications, and data transmission lines grounding shall be installed as necessary to preclude ground loops, noise, and surges from affecting system operation. Equipment, materials, installation, workmanship, inspection, and testing shall be in accordance with manufacturers' recommendations and as modified herein.
  1. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation. Refer to the Riser/Connection diagram for all schematic system installation/termination/wiring data.
  2. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., sensors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.
- B. Current Site Conditions: The Contractor shall visit the site and verify that site conditions are in agreement with the design package. The Contractor shall report all changes to the site or conditions that will affect performance of the system to the Owner in a report as defined in paragraph Group II Technical Data Package. The Contractor shall not take any corrective action without written permission from the Owner.
- C. Conduit and Wire: Refer to 280513 – Conductors and Cables for Electronic Security

**3.2 CLOSED CIRCUIT TELEVISION**

- A. Installation: The Contractor shall install all system components including Owner

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- furnished equipment, and appurtenances in accordance with the manufacturer's instructions, ANSI C2, and shall furnish all necessary connectors, terminators, interconnections, services, adjustments and licenses required for a complete and operable video system.
- B. **Interconnection Video Equipment:** The Contractor shall connect signal paths between video equipment of 250' or less with Cat 6 cable. Cat 6 cables shall be terminated to a Cat 6 RJ-45 Patch Panel (See OIT Cable Standards) Cables shall be as short as practicable for each signal path without causing strain at the connectors. Rack mounted equipment on slide mounts shall have cables of sufficient length to allow full extension of the slide rails from the rack.
- C. **Cameras:** The Contractor shall install the cameras with the proper focal length lens as indicated for each zone; connect power and signal lines to the camera; set cameras with fixed iris lenses to the proper f-stop to give full video level; aim camera to give field of view as needed to cover the alarm zone; aim fixed mount cameras installed outdoors facing the rising or setting sun sufficiently below the horizon to preclude the camera looking directly at the sun; focus the lens to give a sharp picture over the entire field of view; and synchronize all cameras so the picture does not roll on the monitor when cameras are selected.
- D. **Video Recording Equipment:** The Contractor shall install the video recording equipment as shown and as specified by the manufacturer; connect video signal inputs and outputs as shown and specified; connect alarm signal inputs and outputs as shown and specified; and connect video recording equipment to AC power. THIS IS COLLEGE PROVIDED EQUIPMENT. ALL CONNECTIONS ARE MADE VIA COLLEGE PROVIDED MCFNET NETWORK
- E. **Video Signal Equipment:** The Contractor shall install the video signal equipment as specified by the manufacturer and as shown; connect video or signal inputs and outputs as shown and specified; terminate video inputs as required; connect alarm signal inputs and outputs as required; connect control signal inputs and outputs as required; and connect electrically powered equipment to AC power.
- F. **System Start Up:** The Contractor shall not apply power to the CCTV system until the following items have been completed:
1. CCTV system equipment items and DTM have been set up in accordance with manufacturer's instructions.
  2. A visual inspection of the CCTV system has been conducted to ensure that defective equipment items have not been installed and that there are no loose connections.
  3. System wiring has been tested and verified PER OIT COLLEGE CABLE STANDARDS as correctly connected as indicated.
  4. All system grounding and transient protection systems have been verified as properly installed and connected as indicated.
  5. Power supplies to be connected to the system have been verified as the correct voltage, phasing, and frequency as indicated. There may be no power supply needed, as the cameras are POE devices.
  6. Satisfaction of the above requirements shall not relieve the Contractor of responsibility for incorrect installation, defective equipment items, or collateral damage as a result of Contractor work/equipment.

**3.3 WIRELINE DATA TRANSMISSION (See Montgomery College OIT Cable Standards)**

- A. **Installation:** The Contractor shall install all system components including Owner furnished equipment, and appurtenances in accordance with the manufacturer's instructions, ANSI C2 and as shown, and shall furnish all necessary connectors, terminators, interconnections, services, and adjustments required for a complete and operable data transmission system.

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- B. Identification and Labeling: The Contractor shall supply permanent identification labels for each cable at each end that will appear on the as-built drawings. The labeling format shall be identified and a complete record shall be provided to the Owner with the final documentation. Each cable shall be identified by type or signal being carried and termination points. The labels shall be printed on letter size label sheets that are self laminated vinyl that can be printed from a computer data base or spread sheet. The labels shall be E-Z code WES12112 or equivalent.
  - 1. The Contractor shall provide all personnel, equipment, instrumentation, and supplies necessary to perform all testing.
- C. Transient Voltage Surge Suppressors (TVSS): The Contractor shall mount TVSS within 3 m (118 in) of equipment to be protected inside terminal cabinets or suitable NEMA 1 enclosures. Terminate off Montgomery premise conductors on input side of device. Connect the output side of the device to the equipment to be protected. Connect ground lug to a low impedance earth ground (less than 10 ohms) via Number 12 AWG insulated, stranded copper conductor.
- D. Contractor's Field Test: The Contractor shall verify the complete operation of the data transmission system during the Contractor's Field Testing. Field test shall include a bit error rate test. The Contractor shall perform the test by sending a minimum of 1,000,000 bits of data on each DTM circuit and measuring the bit error rate. The bit error rate shall not be greater than one (1) bit out of each 100,000 bits sent for each dial-up DTM circuit, and one (1) bit out of 1,000,000 bits sent for each leased or private DTM circuit. The Contractor shall submit a report containing results of the field test.
- E. Acceptance Test and Endurance Test: The wire line data transmission system shall be tested as a part of the completed IDS and EECS during the Acceptance test and Endurance Test as specified.
- F. Identification and Labeling: The Contractor shall supply identification tags or labels for each cable. Cable shall be labeled at both end points and at intermediate hand holes, manholes, and junction boxes. The labeling format shall be identified and a complete record shall be provided to the Owner with the final documentation. Each cable shall be identified with type of signal being carried and termination points.

**3.4 VIDEO SURVEILLANCE SYSTEM INSTALLATION**

- A. Install cameras level and plumb.
- B. Install tamper switches on components indicated to receive tamper switches, arranged to detect unauthorized entry into system component enclosures, and mounted in self-protected, inconspicuous positions.
- C. Identify system components, wiring, cabling, and terminals according to Division 26 Section "Identification of Electrical Systems."

**3.5 PROGRAMMING**

- A. *Coordinate with College OIT*

**3.6 FIELD QUALITY CONTROL**

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect fieldassembled components and equipment installation and supervise pretesting, testing, and adjusting of video surveillance equipment.
- B. Inspection: Verify that units and controls are properly installed, connected, and labeled, and that interconnecting wires and terminals are identified.



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C. Pretesting: Refer to 280500, Part V

**3.7 ADJUSTING**

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions and to optimize performance of the installed equipment. Tasks shall include, but are not limited to, the following:
1. Check cable connections.
  2. Check proper operation of cameras and lenses. Verify operation of auto-iris lenses and adjust back-focus as needed.
  3. Adjust all preset positions; consult Owner's personnel.
  4. Recommend changes to cameras, lenses, and associated equipment to improve Owner' utilization of video surveillance system.
  5. Provide a written report of adjustments and recommendations.

**3.8 CLEANING**

- A. Clean installed items using methods and materials recommended in writing by manufacturer. B. Clean video surveillance system components, including camera-housing windows, lenses, and monitor screens.

END OF SECTION 282300