

SECTION 28 23 00 - VIDEO CAMERA SYSTEM

PART I - GENERAL

1.1 SECTION INCLUDES

- A. Video Recording Server
- B. Cameras and Accessories
- C. Cabling

1.2 REFERENCES

- A. NFPA 70 - National Electrical Code
- B. Electronic Industries Association (EIA) Video Surveillance Equipment Standards
- C. Open Internet Video Interface Forum (ONVIV) Standards
- D. Institute of Electrical and Electronics Engineers, Inc. Standards

1.3 SYSTEM DESCRIPTION

- A. This specification section describes the furnishing, installation, and commissioning of a partial or complete IP-based security camera system. See *Drawing 28 23 00-1, Video Security Systems Typical IP Video System*.

1.4 SUBMITTALS

- A. Submit shop drawings and product data under provisions of *Section 01 33 23 – Shop Drawings, Product Data, and Samples*.
- B. Camera selections shall be made by the Technology Services Network Services Engineer, Life Safety Engineer or designee and the Chief of Police or designee prior to installation.
- C. Product Data Submittal: Provide manufacturer's technical product specification sheet for each individual component type. Submitted data shall show the following:
 - 1. Compliance with each requirement of these documents.
 - 2. All component options and accessories specific to this project.
 - 3. Electrical power consumption rating and voltage.
 - 4. Heat generation for all power consuming devices.
 - 5. Wiring to be used (must be white CAT6e cable).
 - 6. Number of IP addresses that will be required from the Owner's Information Systems Department.
 - 7. Server information including quantity, processor(s), RAM, available disk space and disk speed.
 - 8. Any network requirements including, but not limited to, bandwidth, latency, and reliability requirements.
- D. *[Note to AE: System Drawings: Project-specific system CAD (DXF or DWG format) drawings shall be provided as follows:*
 - 1. *Provide a system block diagram noting system components and interconnection of components. The interconnection of components shall clearly indicate all wiring required in the system. When multiple pieces of equipment are required in the exact same configuration (e.g. multiple identical cameras), the diagram may show one device and refer to the others as "typical" of the device shown.*

2. *If a recording server is used, a server rack diagram must be completed showing rack elevations and dimensions in the plan view. The diagram shall include equipment layout and all connecting power, network, and/or data transmission cables.]*

E. Quality Assurance

1. *[Note to AE: Provide materials documenting technical certification requirements of the installing contractor.]*
2. *Provide system checkout test procedure to be performed at acceptance. Test procedures shall include all external alarm events.]*

1.5 PROJECT RECORD DOCUMENTS

- A. Submit documents under the provisions of *Section 01 78 39 – Project Record Documents.*
- B. Provide final system block diagram showing any deviations from shop drawing submittal.
- C. Provide statement that system checkout test, as outlined in shop drawing submittal, is complete and satisfactory.
- D. Warranty: Submit written warranty and complete all Owner registration forms.

PART 2 - PRODUCTS

2.1 VIDEO MANAGEMENT SYSTEM (VMS)

- A. The VMS to be used is Milestone XProtect Corporate VMS. *[Note to AE: Contact the Technology Services' Network Service Engineering for Milestone XProtect Corporate VMS Licensing information.]* All equipment provided by the Contractor must be compatible with the Milestone VMS system.

2.2 CAMERAS

- A. Cameras shall be IP-based and compatible with the VMS system listed in this Section.
- B. Cameras shall not use any proprietary data transmission format that prevents them from being used with multiple VMSs.
- C. Cameras shall have a web interface for configuration that is protected by a username and/or password.
- D. Cameras shall be able to act as DHCP clients.
- E. Cameras shall be able to support static IP addresses.
- F. Cameras shall have adjustable rates for the Frames per Second (FPS) transmission.
- G. The cameras' maximum capability shall be a minimum of 15 FPS.
- H. Cameras shall be able to transmit in H.264.
- I. Cameras shall be able to be powered by Power over Ethernet (PoE).
- J. Cameras shall allow for the setup and adjustment of brightness, contrast, and motion detection through its web interface.
- K. Cameras shall be able to support time stamping.
- L. Cameras that support audio recording shall be able to have this feature disabled through its web interface *[Note to AE: or other method if approved by the Owner via the CITES Security Camera Network Services Engineer or designee and the Chief of Police or designee.]*
- M. Cameras shall support 4CIF or higher resolution.
- N. Cameras shall support digital motion detection.
- O. Cameras shall be manufactured in accordance with ISO 9001 / EN 29001.
- P. Cameras shall be of manufacturer's official product line, designed for commercial/industrial 24/7/365 use.
- Q. Cameras shall be manufactured in accordance with ISO 14000.
- R. Cameras shall be compliant with 2002/95/EG RoHS and 2002/96/EG WEEE.
- S. Cameras shall fully support IEEE 802.3af (Power over Ethernet).
- T. Cameras shall fully support IEEE 802.1X (Authentication).
- U. Cameras shall fully support IPv4 (RFC 791).

- V. Cameras shall fully support IPv6 (RFC 2460).
- W. Cameras shall fully support QoS – DiffServ (RFC 2475).
- X. Cameras shall be equipped with at least one (1) 100BASE-TX Fast Ethernet-port, using a standard RJ-45 socket and support auto negotiation of network speed (100 MBit/s and 10 MBit/s) and transfer mode (full and half duplex).
- Y. Cameras to be used outdoors shall be certified to operate between -40°C to +50°C (-40°F to +122°F).
- Z. Cameras to be used indoors shall be certified to operate between 0°C to +50°C (32°F to +122°F).
- AA. *[Note to AE: Exceptions to any specifications in this document may be granted only by means of an approved project variance request.]*
- BB. Camera locations shall be as shown on the Contract Documents.

2.3 RECORDING SERVER

- A. *[Note to AE: Shall meet the current requirements of the Technology Services' Network Service Engineer or designee.]*

PART 3 - EXECUTION

3.1 INSTALLATION LOCATIONS

- A. Security cameras shall be installed in the following locations:
 1. Entrances to buildings
 2. Loading dock and receiving areas
 3. On exterior points that have views of the building curtilage
 4. In areas that have safes or cash handling points
 5. In areas containing large amounts of hazardous materials

3.2 DESIGN

- A. Specific designs for the areas listed in 3.1.A shall be completed by the Technology Services' Network Service Engineer and the Chief of Police or designee.

3.3 WIRING

- A. Provide all wire as required to install the Security Cameras as specified herein.
- B. All wire and cable shall be Underwriter's Laboratories (UL) listed, and shall meet all national, state and local code requirements for its application.
- C. All wire and cable shall meet individual system or subsystem manufacturer specifications.
- D. All insulated wire and cable shall conform to the minimum requirements of Insulated Cable Engineers Association (ICEA) Standards.
- E. Wire and cable shall comply with the applicable requirements of the National Electrical Code (NEC), latest edition, in regards to cable construction and usage.
- F. The conductors of wires shall be copper, and have conductivity in accordance with the standardization rules of the Institute of Electrical and Electronics Engineers, Inc. (IEEE). The conductor and each strand shall be round and free of kinks and defects.

3.4 WIRE TYPES AND SIZES

- A. *[Note to AE: Contact the Technology Services' Network Service Engineer for further information.]*

3.5 ALL RACEWAYS AND WIRING SHALL BE INSTALLED IN ACCORDANCE TO THE FOLLOWING:

- A. National Electric Code.
- B. A minimum of the ¾ inch conduit is required.
- C. All raceway shall use approved connectors at each end and properly connected to an approved box or fitting (note: cannot leave raceway end inside wall or door frame).
- D. All raceways shall be flushed in walls below drop ceiling to devices unless otherwise noted on drawings.
- E. All wiring connections and terminations shall be accessible.
- F. All security camera system wiring shall be installed in conduit or cable tray with future available fill capacity.
- G. All electric wiring shall be installed in metallic raceways or cable tray. Security camera raceways shall be independent from all other building systems. Refer to *Section 26 05 34 – Low Voltage Raceways* for separation of system and power wiring requirements.
- H. All security camera hardware raceway and wiring shall be concealed and installed in a workman-like manner.
- I. A minimum distance of 24 inches shall be maintained between the security camera system and any high voltage (50 volts line to ground or higher) wiring.

3.6 NETWORK CONNECTION

[Note to AE: Contact the Technology Services' Network Service Engineer for further information.]

3.7 TESTING

[Note to AE: Contact the Technology Services' Network Service Engineer for further information.]

END OF SECTION **28** 23 00

This section of the *U of I Facilities Standards* establishes minimum requirements only.
It should not be used as a complete specification.