SECTION 28 20 00
VIDEO SURVEILLANCE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Network (IP) cameras.

B. Camera Servers

C. Video management software.

1.02 RELATED REQUIREMENTS

A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.

B. Section 26 05 29 - Hangers and Supports for Electrical Systems.

C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.

D. Section 27 10 00 - Structured Cabling: Data cables for IP video surveillance system network connections.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction.

B. NECA 303 - Standard for Installing and Maintaining Closed-Circuit Television (CCTV) Systems.

C. NFPA 70 - National Electrical Code.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate placement of cameras with structural members, ductwork, piping, equipment, luminaires, diffusers, fire suppression system components, and other potential conflicts.
   2. Coordinate work to provide power for cameras and equipment at required locations.
   3. Notify Contracting Officer of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Preinstallation Meetings:
   1. Conduct meeting with facility representative to review camera and equipment locations and camera field of view objectives.
   2. Conduct meeting with facility representative and other related equipment manufacturers to discuss video surveillance system interface requirements.

1.05 SUBMITTALS

A. See Section 01 33 23 - Submittal Procedures for submittal procedures.

B. Shop Drawings: Include plan views indicating locations of system components and proposed size, type, and routing of conduits and/or cables. Include elevations and details of proposed equipment arrangements. Include system interconnection schematic diagrams. Include requirements for interface with other systems.

C. Product Data: Provide manufacturer's standard catalog pages and data sheets for each system component. Include ratings, configurations, standard wiring diagrams, dimensions, finishes, service condition requirements, and installed features.

D. Installer's qualification statement.

E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.

F. Field quality control test reports.

G. Project Record Documents: Record actual locations of system components and installed wiring arrangements and routing.

H. Operation and Maintenance Data: Include detailed information on system operation, equipment programming and setup, replacement parts, and recommended maintenance procedures and intervals.

I. Executed warranty.

J. Specimen warranty.

K. Software: One copy of software not resident in read-only memory.

1.06 QUALITY ASSURANCE

A. Comply with the following:
   1. NFPA 70.
   2. Applicable TIA/EIA standards.

B. Maintain at project site one copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

D. Installer Qualifications: Company specializing in performing work of this section with minimum three years documented experience with video surveillance systems of similar size, type, and complexity; authorized manufacturer's representative.

E. Product Evaluation and Listing Organization Qualifications: Organization engaged in evaluation of products and services, including those recognized by OSHA as Nationally Recognized Testing Laboratories (NRTL), and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions and NECA 303.

B. Store products in manufacturer's unopened packaging, keep dry and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

A. See Section 01 33 23 - Submittal Procedures for additional warranty requirements.

B. Provide manufacturer warranty equivalent to basis of design products covering repair or replacement due to defective materials or workmanship.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Axis Communications or equal.

B. Source Limitations: Where possible, furnish system components and accessories produced by single manufacturer and obtained from single supplier.

2.02 NETWORK (IP) CAMERAS

A. Provide cameras and associated accessories suitable for operation under service conditions at installed location. Provide additional components (e.g., enclosures, heaters, and blowers) as required.

B. Where not factory installed, provide additional components (e.g., lenses and mounting accessories) as necessary for complete installation.

C. Network (IP) PTZ Camera - Axis Communications P56 Series; Model P5676-LE (Outdoor, IR illumination); or equal.
   1. Maximum Video Resolution: 2688 x 512.
   2. Maximum Frame Rate: 50/60 fps at 50/60 Hz.
   3. Image Sensor Size: 1/2.9 inch.
   4. Minimum Illumination/Light Sensitivity (Color): 0.11 lux.
   5. Lens: 4.5-135 mm, F1.6-4.6; horizontal field of view of 57.0-2.1 degrees; autofocus, auto-iris.
   6. Pan/Tilt/Zoom: 360 degrees endless pan; 90 degrees tilt; 30x optical/12x digital zoom.
   7. Features: Zipstream, audio support (two-way), forensic capture wide dynamic range, local storage, Power over Ethernet (PoE), day and night functionality, built-in IR illumination, IP66/NEMA 4X/IK10 casing, four alarm inputs/outputs, image stabilization, focus recall.

2.03 CAMERA SERVER

A. Provide server and all components necessary for centralized monitoring of security cameras
   1. AXIS Camera Station S1216 Tower Mk II Recording Server, or equal.
   2. System shall allow remote monitoring.

2.04 VIDEO MANAGEMENT SOFTWARE

A. Unless otherwise indicated, provide all software and licenses required for fully operational system.

B. Video Management System - AXIS Camera Station Pro or equal.
   1. Capacity: Supports unlimited number of cameras, servers, and clients; up to 4 monitors per graphics card.
   2. Recording: Supports continuous, schedule, and event recording modes.
   3. Video Search: Supports search by camera, date, and timeline; smart search, video scrubbing, and locking of prioritized recordings.
   4. Features: H.264, H.265, MPEG-4, and Motion JPEG compression; dewarp support; PTZ control support; remote and mobile access via AXIS Camera Station Pro app; access control and cardholder management; object analytics.

2.05 ACCESSORIES

A. Camera Enclosures and Mounting Brackets:
   1. Where not factory installed, provide accessory camera enclosures suitable for operation under service conditions at installed location.
   2. Where not factory installed, provide accessory camera mounting brackets necessary for installation.

B. Provide components as indicated or as required for connection of video surveillance system to devices and other systems indicated.

C. Provide components as indicated or as required for system power and network connections.
   1. AXIS T8516 PoE Network Switch, or equal.

D. Provide accessory controllers as indicated or as required for operator control.

E. Provide cables as indicated or as required for connections between system components.
   1. Data Cables for IP Network Connections: Unshielded twisted pair (UTP), minimum Category 6, complying with Section 27 10 00.

F. Provide new 21” high-definition monitor, keyboard and mouse for system operation.

G. Provide mounted shelving at appropriate height with appropriate depth for installation.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify field measurements.

B. Verify ratings and configurations of system components.

C. Verify that mounting surfaces are ready to receive system components.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to system where applicable.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install video surveillance system in accordance with NECA 1 (general workmanship) and NECA 303.

B. Install products in accordance with manufacturer's instructions.

C. Provide required support and attachment; see Section 26 05 29.

D. Wiring Method for NFPA 70 Class 2 and Class 3 Circuits: ~~Unless otherwise indicated, use cables (not in conduit), where permitted by code.~~ All wiring shall be installed in 1" conduit and routed per the drawings.

1. Use suitable listed cables in wet locations, including underground raceways.
2. Use suitable listed cables for vertical riser applications.
3. Use listed plenum rated cables in spaces used for environmental air.
4. Install wiring in conduit for the following:
   a. Where required for rough-in.
   b. Where required by authorities having jurisdiction.
   c. Where exposed to damage.
   d. Where installed outside the building.
   e. For exposed connections from outlet boxes to cameras.
5. Conceal cables unless specifically indicated to be exposed.
6. Cables in the following areas may be exposed, unless otherwise indicated:
   a. Equipment closets.
   b. Within joists in areas with no ceiling.
7. Route exposed cables parallel or perpendicular to building structural members and surfaces.
8. Include service loop cable lengths to allow relocation of cameras within 30 ft of installed location.

E. Provide grounding and bonding; see Section 26 05 26.

F. Identify system wiring and components; see Section 26 05 53.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Prepare and start system in accordance with manufacturer's instructions.

C. Adjust cameras to provide desired field of view and produce suitable images under all service lighting conditions.

D. Program system parameters according to requirements of Owner.

E. Test for proper interface with other systems.

F. Correct defective work, adjust for proper operation, and retest until entire system complies with contract documents.

3.04 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.05 CLOSEOUT ACTIVITIES

A. Demonstration: Demonstrate proper operation of system to Owner, and correct deficiencies or make adjustments as directed.

B. Training: Train Owner's personnel on operation, adjustment, and maintenance of system.
   1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
   2. Provide minimum of four hours of training.
   3. Instructor: Manufacturer's authorized representative.
   4. Location: At project site.

3.06 PROTECTION

A. Protect installed system components from subsequent construction operations.

END OF SECTION