

SECTION 28 23 00 - VIDEO SURVEILLANCE SYSTEM

PART 1 GENERAL

1.01 DESCRIPTION

- A. Furnish and install a complete IP Video Surveillance System as shown on the Drawings and as specified herein. Provide all accessories and equipment as necessary for a complete system. **The system shall be a Hanwha Wisenet WAVE VMS. Camera cabling will be provided by structured cabling vendor; cabling is not in scope for VMS Contractor.**
- B. The Surveillance System shall store video on an on-premises network video recorder (NVR). The system shall utilize IP-based cameras to monitor the internal and external areas of the facility. This section specifies requirements for the provision of all equipment, materials, labor, documentation, and services necessary to furnish and install a complete and operational IP-based on-premises Security Camera Video Management System (VMS) for the project, which supports an unlimited number of users, cameras, servers, and sites.
- C. **Provide all components and cost for an on-premises IP-based storage solution per camera.**
- D. QUALITY ASSURANCE, MANUFACTURE
 1. Minimum 3-year experience manufacturing similar products.
 2. Products shall be non-proprietary in such that it may accept a number of different manufacturer cameras in differing forms and functions.
 3. Functional cameras shall include, standard single and multi-sensor cameras, PTZ, fisheye, thermal, explosion proof, etc.
 4. Functional camera shall include differing camera resolutions ranging from 2MP up to 4K cameras.
 5. Functional camera shall include different form factors to include dome, PTZ, bullet, turret, and fisheye.
- E. QUALITY ASSURANCE, CONTRACTOR
 1. Minimum 3-year experience installing security products. Installers shall be trained and authorized by the Manufacturer at the time of this submittal to install, integrate, test, and commission the system.
 2. **The actual installation contractor(s) working on this project shall have completed the Wisenet Professional Certification and maintain that status with the warranting manufacturer, including all training requirements, for the duration of the VMS project.**
 3. Supply a list of a minimum of five (5) projects over \$100,000 that the firm has completed along with contact names and phone numbers of the Owners' Representatives for those projects. At least three (3) of the completed facilities shall have been occupied and in full operation for at least one (1) year.
 4. It is the intent of this contract for the Contractor to provide sole responsibility for material, labor, and service for the security system. The Integrator shall, at a minimum, staff the project with two certified installers for project foremen and crew leader positions.
- E. All equipment shall be UL listed and labeled and in accordance with applicable NEMA and ANSI Standards.

1.02 SUBMITTALS

- A. For Review:
 - 1. Product data sheets of all components
 - 2. Wiring Diagrams
 - 3. Schematic Block diagrams
 - 4. Network bandwidth calculation
 - 5. Digital video storage calculation
 - 6. Copies of all certifications

- B. To be included in Record and Information Manuals:
 - 1. One (1) copy of each approved submittal
 - 2. Test results
 - 3. Certificate of System Completion

1.03 MANUFACTURERS

- A. As listed within. Basis of design listed is intended to meet the minimum requirements. Other acceptable manufacturers are as noted.

PART 2 PRODUCTS

2.01 IP CAMERA SYSTEM

- A. The system shall be a complete IP-based video surveillance system that shall utilize the Owner's network as the method of transport to a video surveillance server that shall record and retain the video and provide an export capability to transfer files that the Owner wishes to record to their choice of media.

- B. Cameras
 - 1. All Cameras shall utilize Internet Protocol as the transport for the video signaling.
 - 2. All cameras and mounts mounted on both exterior and interior of building should match mounting surface color. This color must be verified with Owner.
 - 3. Housing color for all exterior pole-mounted cameras (including any attached mount and box) shall be painted by the manufacturer to match the lighting pole color.
 - 4. **Basis of design using the recommended models below.** The cameras shall meet or exceed the performance requirements and criteria for each model listed.
 - a. Outdoor 360-degree 4-lens camera: Hanwha PNM-9085RQZ
 - b. Outdoor panoramic 3-lens camera: Hanwha PNM-9022V
 - c. Indoor/Outdoor dual-lens camera: Hanwha PNM-12082RV
 - d. Indoor fisheye 360-degree 4-lens camera: Hanwha QNF-8010
 - e. Indoor/Outdoor 4MP dome camera: Hanwha ANV-L7082R
 - 5. Provide enclosures and appropriate mounting bracket for each camera provided based on the location and environment of the installation location. Refer to drawings and schedule for camera mounting details. All exterior wall mount cameras shall be installed with an exterior wall mount kit such that the camera is horizontally mounted (not vertically mounted on the wall). For exterior ceiling mount camera locations, where installed on a gable or sloped ceiling, ensure that camera view will be level to the ground by either (a) rotating the camera lens or (b) providing an appropriate pitched mount bracket to compensate for the slope.
 - 6. See attached camera schedule for type and location.

2.02 CAMERA VIDEO MANAGEMENT SYSTEM (VMS)

1. The VMS shall manage video and event data received from cameras connected to multiple recording servers, as well as from physical security, content analytic, environmental detection, transaction and other enterprise systems.
2. The VMS shall allow the integration of a host of add-on components via integration tools including data link integration events, API commands, contact closure and more.
3. The VMS shall run on off-the-shelf PC hardware and support all leading manufacturers' cameras and devices (as well as all industry standard compression formats (MPEG4, MJPEG, H.263, H.264 and H.265, MJPEG)
4. The VMS system resources shall be optimized through per-camera configuration for compression level/format, image resolution, bandwidth, frame rate, conditional recording, retention time, archiving frequency, archiving location and more.
5. The VMS shall operate so all recording servers and client users are managed by the base, which coordinates all event and alert handling, manages users' rights to specific cameras and functions system wide (Active Directory supported), and distributes all shared assets
6. The VMS shall function so that storage, based on either size or retention period, is allocated per camera or camera group, with prioritization of important cameras. Video can be stored on local or network drives, using a database structure that eliminates the distinction between 'live recording' and 'archived' video.
7. The VMS shall have a system-wide repository for shared assets management, including maps for easy navigation to cameras, icons and events tagging/classification tables.
8. The VMS shall provide free client software capable of operating on Windows, Linux, or Mac and have the following additional features:
 - a. Event Management
 - b. Event Prioritization
 - c. Composite Events (linking events or alerts)
 - d. Push video alerting
 - e. Management of Users, User Groups and Authorizations
9. The VMS shall be capable of providing the following Actions on an event:
 - a. Send email notification to one or more recipients
 - b. Move PTZ camera to preset
 - c. Send HTTP GET/POST request
 - d. Send TCP/UDP package
 - e. Send event camera(s) to remote Video wall
10. The VMS shall support the recording, viewing, archiving, and configuring of at least the camera manufacturer that is chosen.
11. The VMS shall support access for mobile devices (Smartphone, touch pads etc.) with proper authentication.
12. Acceptable Manufacturer and Product shall be:
 - a. Hanwha Wisenet WAVE

Network Video Recorder Hardware (NVR)

1. The NVR shall be a rack-mounted unit capable of being installed in an EIA standard 19" rack without the use of custom mounting hardware with the exception of commercial, off-the-shelf, rack-mount hardware from the NVR server manufacturer. Each NVR shall have Scalable Architecture with unlimited number of cameras, connected to multiple recording servers (up to 64 cameras per server) at multiple sites; support for MJPEG, MPEG4, H.263 and H.264 compression formats, at image resolutions up to 5MP (and higher) and frame rates of 30 fps or more; support for analog cameras via a wide range of IP video encoders.
2. Each NVR shall be configured via an administration utility for setup and configuration of cameras and I/O devices, camera event settings, archive settings, scheduling, and soft buttons for manually triggered events.

3. Each NVR shall automatically discover and detect cameras and other devices based on user preferences and have the following other features
 - a. Batch Device Configuration
 - b. Export/import of configuration data
 - c. Set automatic system restore points
 - d. Recording and Archiving
 - e. Maintenance-Free, Transparent Archiving
 - f. Multi/dual-stream support
 - g. Support for DNS and NAT (Network Address Translation.)
 - h. PTZ Preset Settings
 - i. PTZ Patrols
 - j. Networking: Support for Multi-Network operation
 - k. Detailed logging
 - l. Advanced Motion Detection with three resolution levels of motion detection.
4. Each NVR shall have no limit on the number of concurrent client users, and no incremental cost for additional Clients.
5. Each NVR shall support up to eight connected displays.
6. The NVR shall be configured with RAID-5 storage consisting of a 4U chassis and eight hot swappable hard drives. The RAID-5 storage shall be internal to the server and shall provide notification of a drive failure to the administrator.
7. In addition to the previously declared requirements of the NVR, it must meet all specifications set by the manufacturer.
8. **The contractor should price retention per camera at 7 days. Explanation of retention process and capability should accompany this bid.**
9. Provide all bridges, gateways or other devices needed to complete the system installation.
10. The NVR will use 1 network interface card. Card shall be RJ45 connection with the capability of a 1 Gbps.
11. Acceptable Manufacturer shall be Wisenet Wave WRR-P-E200L2 or Engineer approved product.

B. Media Converter/POE (for pole cameras)

1. A fiber optic Ethernet media converter, externally powered, capable of communicating Ethernet over fiber via a Gig E SFP port and supplying Ethernet data and power (PoE+) over Cat 5e/6 cable
2. Receive an optical signal via an SFP port device power and supply Ethernet signal and power via RJ-45 connector.
3. Minimum 50 Watts of power for each port.
4. Provide 2 ports of POE power and 10/100/1000Base-T
5. Basis for design: Perle S-1110HP-XT
6. Equivalent Manufactures: Altronix, Comnet, and Vigitron

C. Video Monitor (at staff entrance door(s))

1. Furnish and install wall-mounted video monitor(s) at interior of staff entrance door(s) as specified on drawings. Monitor will show live feed of exterior camera of entrance door.
2. Basis for design: 27" LED monitor, wall mount with articulating arm; necessary hardware for displaying live camera feed on monitor.

2.03 APPLICATION

- A. Provide IP cameras with lenses appropriate for the areas to be covered.

2.04 INSTALLATION

- A. Install Video Surveillance System as shown on the Drawings in accordance with manufacturer's written instructions.
- B. **Camera cabling will be provided by structured cabling vendor; cabling is not in scope for this proposal.**
- C. Provide 120 volt power to all equipment from nearest emergency circuit.
- D. Provide grounding of all equipment in accordance with ANSI/EIA/TIA-607.
- E. Coordinate Camera height with owner before securing.
- F. Install all components in cabinets and racks.
- G. Coordinate complete system installation with Owner's representative.
- H. Install Ethernet Switches and validate connectivity throughout. Configure all VLANs, IP Routing, and IP Subnets.
- I. Provide all required Integration Services to setup and program the Network (IP addresses, VLAN's, Routing, Wireless Surveys, etc.).
- J. Contractor shall supply the "latest" software updates as part of the system configuration for two (2) years after system acceptance.

2.05 TESTING

- A. Provide a complete functional test of all components in accordance with manufacturer's recommendations.
- B. Operate system for a minimum of seven (7) consecutive days with no problems before claiming contract completion.
- C. Refer to Section 26 08 40, "Electrical Tests, Adjustments, Inspection."

2.06 EQUIPMENT DEMONSTRATION

- A. After all system tests have been completed, schedule an instruction period with the Owner. Instruction to be provided by manufacturer's authorized field technician. Include up to four (4) sessions of four (4) hours each on different days.
- B. Instruction shall include:
 - 1. Location of all components of the system and explanation of their function
 - 2. Demonstration of equipment
 - 3. Maintenance and repair procedures
 - 4. Programming procedures
 - 5. Review of documents in Record and Information Manuals
- C. Contractor shall have all participants sign the Certificate of System Completion in Section 28 00 99, "Requirements for Contract Completion."

2.07 WARRANTY OF WORK

- A. Contractor shall warrant all materials, equipment, and workmanship for a period of one (1)

year from date of completion.

END OF SECTION