

278000 – Video Surveillance

Part 1 - General



Record Version 20231218

1.1 Scope of Work

- A. This document describes the requirements for the contractors, products and installation relating to furnishing and installing a complete Video Surveillance system. Contractor to provide all labor, materials, tools, equipment, installation, programming, configuration, and testing required for the complete installation of the Video Surveillance System.
- B. Complete Video Surveillance System is defined as all labor and materials required to complete the Work described herein and on the Drawings including but not limited to: conduit, raceways, cables, cabling, wiring, connectors, riser blocks, patch panels, patch cables, network interfaces, back boxes, IP Network Cameras using PoE, camera lenses, KVM's (video monitors, keyboards, mice), Network Video Recorders, attached data storage hard drive arrays (SAN/NAS), PoE switches, programming, power supplies, power distribution units (PDU's, plug strips), enclosures, tamper switches, latches and locks, mounts, arms, housings, stands, relay interfaces and equipment rack cabinets or rack shelves.
- C. Specifications and Drawings do not show or list every item, accessory, fastener, bracket, sub-assembly and appurtenance to be provided. When an item not shown or listed is clearly necessary for proper installation, operation and functioning of the equipment and systems the Contractor shall provide, install, test and certify the item at no additional cost.
- D. Provide all software, licensing, hardware, cabling, and programming required for the installation, connection, programming, customization, and functional operation of the new Video Surveillance System equipment.
- E. Provide and install system and client software, system and client programming, labor and licenses for local and remote access to the Video Surveillance System from designated client computer workstations on the Owner's LAN/WAN network. Coordinate with Owner on the designated workstations.
- F. Conduit, wire, and cable installations performed under this Section shall comply with all applicable Local Building Codes and National Electrical Code with California Amendments.
- G. Contractor is responsible for fully implementing the Work described in the Specifications and shown on the Drawings to create a fully functional and completely operational Video Surveillance System.

1.2 Contractor Qualifications/Quality Assurance

- A. **Safety and Indemnity**
 - 1. Contractors will submit the necessary documentation to demonstrate their compliance with Section 270000 "1.5 A. Safety & Indemnity".
- B. **Contractor Qualifications**
 - 1. Contractors will submit the necessary documentation to demonstrate their compliance with Section 270000 "1.5 B. Contractor Qualification".
- C. **Quality Assurance**
 - 1. Contractor shall comply with all requirements as specified in Section 270000 "1.5 C. Quality Assurance".
- D. **Warranty**
 - A. Contractor shall comply with all requirements as specified in Section 270000 "1.8. Acceptance & Warranties".

- B. Contractor and system and product manufacturers guarantee installation, equipment, computer hardware, software, software support, licenses, and all parts and labor for two (2) years from the official start of the project and a total of five (5) years of support for the Owner directly with the Manufacturer.
- C. All products are to be licensed and have manufacturer support for at least five (5) years.

1.3 Submittal Documentation

- A. The successful contractor shall provide their submittal package in accordance with the Section 01 20 00 1.06 Submittal Schedule, and Section 270000 “1.6 Submittal Documentation”.

1.4 Equivalent Products

- A. All Products described and Part Number given in this Specification are those of Exacq Systems and Axis. Any new installation is to match the existing already in use across the district.
- B. Pre-Approved Equals:
None. Any new site needing a Video Surveillance System is to use the existing manufacturers already defined in use.

Part 2 - Products

Cameras

- A. All cameras will be IP-based cameras. No analog cameras are allowed.
- B. All cameras shall be vandal resistant. Cameras must be IP66 or greater and IK10 or greater.
- C. All cameras must have drivers compatible with exacqVision Enterprise VMS Software.
- D. Will be Day/Night with WDR per manufacturer specs. WDR shall be 120dB or greater.
- E. Cameras will have built in support for Power over Ethernet.
- F. Each camera assembly is 1080p (HD) minimum resolution, clear dome, auto-focus/remote-focus, auto iris, with lowlight capability.
- G. Will be equipped with Varifocal lenses
- H. H.264 compression or better shall be used.
- I. Typical installations will be flush, surface, pole, wall, and corner mounted as indicated on the plans.
- J. Approved manufacturer: **Axis**

AS NEWER MODELS ARE RELEASED, IF A NEWER REPLACEMENT MODEL EXISTS FOR THE MODELS LISTED BELOW, THE NEWER MODEL IS TO BE USED.

2.01 – Interior/Exterior Cameras

- A. Axis P4705-PLVE Panoramic Camera (dual sensor)
- B. Axis P3255-LVE Dome Camera (single sensor – To be used when dual sensor would be superfluous)

2.04 – Cabling

- 1. Cable and jack color are to be purple. Cable and jacks specifications are in Section 271000, including the part number for the purple jacks.

2.05 – Video Surveillance System

- A. Security Contractor shall provide, configure, and install exacqVision Enterprise VMS Software.
- B. Security Contractor shall provide, configure, and install servers based on specifications from Owner, per site as necessary. Contractor shall coordinate with Owner on server location and installation schedule.
- C. The system must be configured with single sign on. Contractor to work with Owner to setup integration with the Owner's Active Directory.

2.06 - Network Video Recorders (NVR)

- A. Shall be manufactured by Exacq or specifications provided by Owner. Check with Owner prior to ordering any hardware to verify the correct system is being ordered.
- C. The system shall recall the video from any recorded even within the last 30 days.
- D. Recording and Retrieval
 - 1. Provide a minimum hard-disk storage capacity of 30 days of recording, for cameras installed and recording to this NVR. Storage capacity shall be calculated based on the following parameters:
 - a. Real-Time Mode: 200% of the total number of cameras, 24 hours per day, 7-days per week, at highest resolution and full frame rate.
- E. Recording Resolution: 1080p or greater
- F. All Exacq necessary servers shall be used for this system. Contractor to provide, program, and install. ExacqVision Z series servers shall be applied per site as necessary or server specifications provided by Owner.

Typical Elementary Site will have 25+ cameras. Intermediate or High School will have 30+ cameras. Check with owner for specs hardware

CONTACT OWNER FOR SPECIFICATIONS OF HARDWARE THAT IS ACCEPTABLE.

2.07 - Patch Panels and patch cords

- A. Contractor to provide all patch panels and patch cords needed. All panels and cords are to be a minimum of Category 6. Owner to provide, configure, and install any needed network switches. All patch cords are to be purple in color and are to be manufactured cables.
- B. Quality Assurance
 - 1. Follow all applicable guidelines in specification section 271000.

Part 3 - Execution

3.01 REQUIREMENTS

- A. Video Surveillance System shall be fully functional and completely operational.
- B. All wall, floor, and ceiling penetrations, regardless of the fire rating of the partition, must be properly sleeved with EZ-Path or conduit penetration assembly and properly sealed using approved fire stopping materials and sealants.
 - 1. Exterior penetrations shall be properly sealed using approved weather-proof fire stopping materials and sealants.

- C. Provide seismic restraint for all equipment, including equipment racks and consoles.
- D. Security equipment, devices, brackets, mounting arms or pendants, junction boxes, cabinets, and enclosures shall be installed utilizing stainless steel tamper-resistant fasteners and mounting hardware.
 - 1. Tamper-resistant fasteners shall be pin Torx.
 - 2. Provide two (2) driver bits and hand tools to the Owner's representative for each type and size of pin Torx security fastener provided.
- E. All keys relating to the security systems shall be kept separate from the building systems and delivered to the Owner's representative on transmittal.
 - 1. Security equipment enclosures shall be locked at all times. Keys for security equipment enclosures shall be turned over to the Owner and shall not be left in the cam locks or on top of the enclosures.

3.02 CONTRACTOR

- A. The contractor shall be certified by the manufacturing company in all aspects of design, installation and testing of the products described herein.
- B. The contractor shall utilize the authorized manufacturer components and distribution channels in provisioning this Project.
- C. Contractor shall have a minimum of five (5) years of recent experience on structured cabling systems of similar type and size.
- D. Contractor and design firm shall be in compliance with all federal, state and local statutes regarding qualifications of firms.
- E. The contractor shall be experienced in all aspects of this work and shall be required to demonstrate direct experience on recent systems of similar type and size.
- F. The contractor shall own and maintain the tools and equipment approved by the cabling system manufacturer for successful installation and testing of Category 6 balanced twisted pair distribution systems.
- G. The contractor shall have personnel who are adequately trained in the usage of such tools and equipment.
- H. Contractor shall submit a resume of qualification with the Contractor's proposal indicating the following:
 - 1. A list of recently completed projects of similar type and size with contact names and telephone numbers for each
 - 2. A list of test equipment proposed for use in verifying the installed integrity of metallic and fiber optic cable systems on this project.

3.03 – Programming

- A. Contractor shall provide initial programming for all applicable systems. Contractor programming shall include, but not be limited to:
 - 1. IP addresses/host name for all cameras and NVRs

2. Device Addresses

- a. Description per camera shall be worded to describe the intended camera coverage, not the installation location of the camera.
- b. All descriptions shall be approved by Owner.

4. Maps with functional device icons

- a. Contractor to request floor plans from Owner as necessary to program maps into VMS software.
- b. Maps shall be graphically clear and indicate camera locations.
- c. Camera icons shall be clickable and allow functionality menu for controls..

5. Programming of NVR's

6. Programming of any Video Surveillance server(s) contractor installed.

3.04 – Testing and Reports

- A. System testing and reporting will occur in two phases.
- B. Contractor shall perform System Functionality Testing and correct all deficiencies prior to performing the Commissioning Testing with the involvement of the Owner.
- C. Perform System Functionality Testing using manufacturer-certified personnel who have attended a manufacturer's training school for installation and testing of the systems. Perform testing as required by the manufacturer; testing by means other than manufacturer's procedures will not be acceptable unless agreed to by Owner in writing.
- D. Contractor shall perform System Functionality Testing and document these tests for review and approval by the Owner and Security Consultant prior to the Commissioning Testing.
- E. If testing will require monitors, mouse, and keyboards, contractor is to provide their own equipment at no extra cost to the client. Monitors, mouse, and keyboards are not provided by Owner at any of the IDF rooms or IDF closet locations.
- F. At a minimum, perform System Functionality Testing to demonstrate and document:
 1. Client Computer Workstations
 - a. Only one workstation per site is to be tested, designated by Owner. Client workstation is used to verify that all cameras are installed and functioning properly, all security roles for camera access are working as intended, and the site map is working with all cameras on the map and viewable. Demonstrating the live view and search is required. The maps are site-specific graphical floor plans populated with functional device icons. The functional device icons provide graphical user interface to actions associated with the field security devices represented by the device icons. The security roles need to demonstrate full access, export access, and live/search access.
 2. Network Video Recorders (NVR)

- a. The NVR is communicating over the Owner's LAN/WAN data network and is to be connected to the designated port by Owner.
- b. The NVR operates correctly connected to 120VAC supply power.
- c. The NVR records and displays all of the cameras connected to it.
- d. The NVR stores recorded video and allows the retrieval of stored video when requested from a client workstation.
- e. The NVR displays clear, bright, and focused images from all associated cameras.
- f. The NVR produces a system notification alarm when any associated video image is lost. This notification alarm shall be produced whether the video loss is from loss of. The NVR starts, operates, and records properly when the unit is restarted from a planned or unplanned shutdown.

3. Cameras

- a. The camera video feed displays on client workstations without flickering due to excessive latency greater than half of a second.
- b. The camera video feed displays on client workstations without pausing or freezing.
- c. The camera auto-focuses to display clear image acceptable by Owner.
- d. The day/night interior and exterior cameras adjust properly between day and night lighting conditions.
- e. The Wide Dynamic Range and auto-backlight compensation cameras adjust properly to challenging lighting conditions to produce clear, bright, and focused images. Wide Dynamic Range should exceed 100dB.
- f. The camera produces a stable picture with no roll, flutter or ghosting.
- g. The camera resumes operation and produces clear, bright, and focused images when PoE power or network connectivity is restored from a failure.

G. Upon completion of the System Functionality Testing Security Contractor shall submit written reports including but not limited to the following information:

- 1. Certification that all devices and equipment meet or exceed the requirements of the System Functionality Testing.
- 2. Certification that all equipment is properly installed, programmed, fully functional and completely operational, and conforms to Specifications and Drawings.
- 3. Complete Bill of Materials of all equipment installed including quantity, make and model as well as serial numbers, MAC addresses, and IP addresses/host names of major components.
- 4. Technician's field test reports of all cameras, cables, devices, and equipment.
- 5. Test technician's name, company and date(s) of test.
- 6. Exceptions shall be clearly noted in a Punch List.

- H. Following review and acceptance of the System Functionality Testing report by the Owner, the Contractor shall perform Commissioning Testing of all security system equipment and software in the presence of the Owner.
- I. Commissioning Testing shall include performance testing and functionality testing to demonstrate to the Owner that each system software and hardware component functions as required by the Specifications and Drawings.

4.0 Existing Systems

A. If the site has an existing system, Contractor to coordinate with Owner for any equipment that needs to be removed for demolition or structural changes. Contractor is not to remove any equipment without written approval from Owner (ie, submit RFI).

B. Contractor is responsible to replace any cabling that is damaged or needs to be replaced due to construction. Note that all camera cabling is purple in color and all data jacks are purple. If cable is replaced, Cat6 purple cable is to be used (per spec 271000).

C. If existing IDF/cabinet is being replaced or moved, Contractor is responsible to re-connect any existing cameras and run new data cables as needed. Data cables are NOT to be spliced or patched through multiple points.

END OF SECTION