SECTION 28 23 00 – VIDEO SURVEILLANCE SYSTEM

1.1 GENERAL

A. This Section defines the general design requirements for a uniform Video Surveillance System that shall be followed for all OFCC Technology construction projects.

B. Refer to Sections 8500, Technology Systems

C. 28 13 00 Access Control System

D. 28 16 00 Intrusion Detection System for additional information.

1.2 SECTION INCLUDES

A. IP Integrated Video Surveillance System

B. Uninterruptible Power Supply (UPS).

1.3 QUALITY ASSURANCE

A. National Fire Protection Association.

B. NFPA 730 – Guide for Premises Security

C. NFPA 731 – Standard for the Installation of Electronic Premises Security Systems

D. National Electric Code.

E. American with Disabilities Act.

F. Underwriter's Laboratory.

G. FCC Class B.

H. NEMA Type 4AX.

I. NEMA Type 1.

J. NTSC/EIA.

K. ISO/IEC 14496-2 MPEG-4.

L. H.264.

M. Latest ANSI TIA/EIA-568, 569, 606, 607 Standards and Eleventh Edition (or later).

N. BICSI Telecommunications Distribution Methods Manual (TDMM).

1.4 SYSTEM WARRANTY

A. The Video Surveillance System and software shall be fully warranted for one (1) year from date of substantial completion by the contractor and manufacturer. If any defects are found within this warranty period, the defective system component shall be replaced at no extra cost to the Owner for parts or labor. Provide a statement of this warranty with the O&M manuals and to the Director of IT. Make available a service contract offering continuing factory authorized service of this system after the initial warranty period.

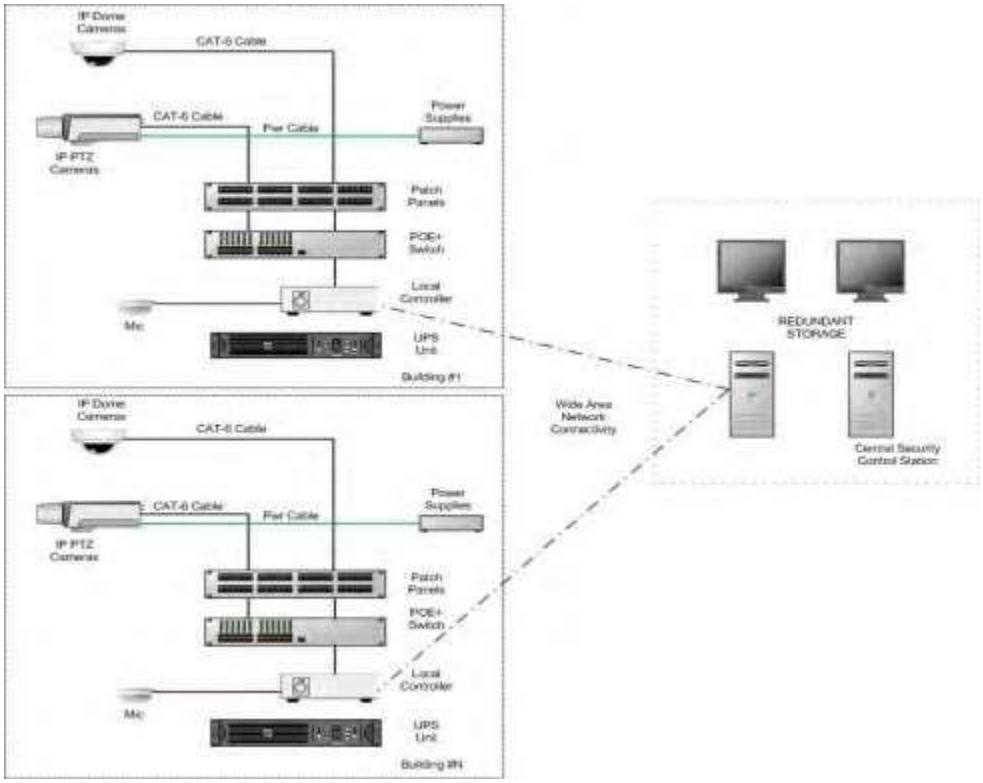

Figure ***1*** – Typical Owner-Wide IP CCTV System

1.5 GENERAL

A. Furnish a new IP Integrated Video Surveillance System that provides a simple and easy-to-use graphical user interface.

B. The system shall provide local and central operational control and viewing of all cameras.

C. Provide IP System as shown in Figure 1 above.

D. All IP systems provide a minimum of 2MP technology that permits greater image resolution and detail and enable advanced video analysis and recognition technologies.

E. All Designs shall use IP Cameras, POE+ Ethernet Switches and Local NVR units per building.

F. Optional Cloud Storage.

G. When an Owner has more than one building, the Video Management Server and Remote Viewing Station may be in one of the Owner's buildings or on a virtual server and the other buildings may be attached to the main server via the Wide Area Network. All buildings shall have cloud or local recording NVR units and interface to the Central Server and Control Consoles and shall function as a single unified system.

H. The Video Surveillance System shall seamlessly integrate with the Access Control and Intrusion Detection Systems.

I. The Systems shall be in the Main Equipment Room (MER) and connected to generator-powered UPS Units. Backup power shall be provided for both cameras and recording equipment.

J. Provide sufficient cameras to cover the entire school and surrounding lots.

K. As a minimum provide fixed focus camera coverage for:

1. All entrances/exit doors.
2. Hallways.
3. Restroom entrance/exit doors.
4. Loading docks.
5. Kitchen areas.
6. Lunch lines.
7. Cafeteria.
8. Auditoriums.
9. Playgrounds.
10. Bus pickup/delivery.
11. Parking lots.
12. Athletic Areas.

L. Optional PTZ Cameras

M. Mount external cameras to the side of the building for most situations. Use pole mounting for special circumstances, as required.

N. Connect a minimum of one building mic to the CCTV Recording system. Locate the Mic in the Central Office area (typical). Connect the audio output from the building paging system to the CCTV recorder. Consider connecting the audio output from the PABX E911 calling system to the CCTV recorder.

O. Systems shall be monitored with an HDTV monitor in the Central Office area. Supply monitors based on system camera requirements. If required by the owner, post the appropriate signs advising the public that audio/video recording is taking place in the facility.

1.6 CAMERAS

A. Minimum resolution shall be 1080p.

B. All cameras shall be contained in domed, impact and vandal-resistant enclosures. Consider bulletproof enclosures for high crime areas.

C. Compatible lenses specific to each placement and required field of view will be used. In addition, MPIX cameras require specialized MPIX compatible lenses.

D. Typical ***interior*** lenses range from ***2.8-12mm; typical exterior lenses range from 5-50mm.***

E. Coordinate lens type with CCD sensor size.

F. Place multiple cameras in hallways and avoid single cameras covering a long hallway.

G. Limit camera spacing to 75 feet maximum.

H. Camera placement guidelines:

1. Avoid backlight (this problem can occur when attempting to capture an image from behind a window, etc.). Utilize wide dynamic range cameras in these applications.
2. Always use auto iris lenses for outdoor applications.
3. Avoid direct sunlight – try to position the camera the same direction as the sun.
4. Avoid viewing too much sky – it results in too much contrast.

5. Avoid reflections.

I. Cameras shall have integral motion detectors for changing the frame per second recording rate, depending on system set up.

J. Coordinate placement of all cameras with Owner and a Qualified Security Professional.

K. All cameras shall be equipped with an auto-iris, automatic gain control and automatic white balance.

L. All cameras shall be centrally powered from associated Telecommunication Room, generator powered, UPS Unit.

M. All exterior PTZ cameras shall be contained in a pendant or recessed 180 degree style, vandal proof, exterior enclosure with integral heater module. Verify enclosure style with the Design Professional.

N. All PTZ cameras shall meet the following minimal features:

1. 22X Optical Zoom, 10X Digital Zoom.
2. Window Blanking.
3. 64 Presets.
4. 0.5° Preset Accuracy.
5. 140°/second Pan Speed.
    a. Rotating Discreet Liner.
    b. One Dynamic Window Blanking Area.
    c. Proportional Pan and Tilt.
    d. Programmable Zoom Speeds.
    e. 360 Degree scan.
    f. Day/Night Operation.
        i. 0.08 lux at ½ sec shutter (Color).
        ii. 0.30 lux at 1/60 sec shutter (B/W).
        iii. 0.013 lux at ½ sec shutter (B/W).
    g. 30 fps – NTSC.

O. Provide fiber-optic interfaces for all external, pole-mounted cameras.

P. All IP cameras shall meet the following minimal features:

1. Powered via 802.3af Power-Over Ethernet (POE+) using standard Category 6 cable.
2. Optional additional power for External PTZ cameras.
3. MPEG-4, MJPEG, and H.264 video compression. Minimum dual stream.
4. Audio capabilities with optional mic.
5. Optional DSP for video intelligence and recognition techniques.
6. Removable storage slot (Micro SD) with minimum 4GB memory.
7. Digital Pan/Zoom.
8. CCD sensor – 1/2-inch minimum.

9. Integrated PZT control over one Category-5e cable.
10. IR Cut Filter for low-light conditions.
11. SNMP support for management.
12. HTTPS for encrypted Communications.
    a. Built-in Web Server.
    b. Fixed IP address.
    c. 30 fps – at full resolution.

1.7 NETWORK VIDEO RECORDER (NVR)

A. New installations shall use Network Video Servers (NVS).

B. The NVR shall provide a high quality, recorder capable of storage and playback of images from all cameras at full resolution and frame rate. The NVR shall support new IP cameras with ONVIF compliance. NVR quantity and size guidelines are based upon bandwidth, not quantity of cameras.

C. The NVR shall be able to record full-screen video images continuously, upon motion detection, or according to a time schedule to its internal hard drives.

D. The NVR shall have the capability to simultaneously record, archive background images, and allow multiple user network viewing and playback with no loss of performance.

E. Internal NVR hard drives shall provide for 30 days of storage at an average rate of

F. 7.5 fps per camera, full HD resolution.

G. All recording to the hard drive shall have a digital signature applied to the disk file including time, date and camera info.

H. The NVR shall support simultaneous audio recording and playback on at least one channel in real time.

I. The NVR shall have video motion search to allow recorded searches on the hard disks, based on movement in a particular area of the image.

J. The NVR shall provide a list of the activity events that occurred within a defined area.

K. The NVR shall have a standard Ethernet connection and The Ethernet connection shall allow live and recorded viewing on a networked PC using a manufacturer’s Network Viewer or via web pages over a standard Internet browser.

L. The NVR shall support file export of digitally signed images over the network.

M. The NVR shall provide a user-friendly, paged menu system that is controlled from the face of the NVR and viewable through a KVM switch. Each NVR shall be connected to a multi-port, IP enabled KVM with integrated flip up monitor/keyboard/mouse.

N. The NVR central Viewing station shall be completely integrated with the Intrusion Detection and Access Control Systems.

1.8 REMOTE VIDEO SERVERS

A. Remote Video Servers shall have the following minimum features:

B. Store and Forward capability - Store data at the edge of the LAN/WAN and only forward over the network when required.

C. Event based recording for intrusion or access control activity.

D. Provide local storage of video streams in the event of WAN communication failure to the Central

Storage Servers.

E. Complete control over frame rate, video resolution and other settings on a timed and trigger basis.

F. ***All current*** compression ***technologies***.

G. Integrated with Access Control and Intrusion Detection Systems.

H. PTZ support.

I. Motion detection support.

J. Integrated web server for configuration.

K. Video loss alarm capability.

1.10 IP VIDEO DECODERS

A. In all IP installations, any place where remote video is to be provided for local viewing, a multi-stream decoder (minimum 2x2 image per display) will be required.

B. A local PC, running the CCTV remote view software and connected to the local monitor, can also be utilized for this purpose.

1.11 INSTALLATION

A. The system wiring and installation shall comply with all applicable codes and drawings and shall be installed in accordance with the manufacturer's recommendations.

B. All wiring shall be color-coded and labeled at each end with self-laminating, machine- printed labels.

C. All wiring and component installations shall comply with the latest edition of the National Electric Code (NEC).

1.12 TRAINING

A. Provide a minimum of forty (40) hours of training to the Owner's personnel. Plan for multiple training trips to the site. Training session(s) shall cover the following topics at a minimum:

1. System Equipment Connectivity

2. Device Configurations

3. Operation, maintenance, and upgrade procedures.

B. Training to be arranged with Owner personnel. 40 hours should be spread out over the length of the warranty (Ex: 8 hours at project turnover/completion, 8 hours at 3 months, 8 hours at 6 months, 8 hours at 1 year, 4 hours at 2 years, 4 hours at 3 year).

C. Training occurs in maximum of 2 hour increments per personnel or groups of personnel.

D. Consider requiring Contractor to provide manufacturer training vouchers for a portion of the training, which are valid during the warranty period.

E. Training shall be by a certified manufacturer instructor.

F. Training schedule shall be coordinated with Owner personnel and their needs.

G. Training plan, timeline, and agenda shall be provided to Owner IT personnel and signed off by Owner and Contractor.

H. A warranty certificate and agreement shall be provided to Owner IT personnel at initial training session.

I. Provide a digital video copy of the training sessions.

END OF SECTION