PPS Division 28: Electronic Safety and Security Standards

GENERAL

The following standards are for the safety of students and staff and are to be adhered to for any design or installation of safety and security systems. All related codes and standards apply.

Deviations may be considered from these requirements if the result provides a safe, adequate and quality design and installation. Deviations or Value Engineering must be approved in writing by the affected PPS Departments: by Security, IT and Facilities for security and access control related items, and by the Electric Shop for fire alarm related items.

WARRANTY

Provide a two-year warranty on all equipment and installations.

FIRE ALARM

Design Criteria:

1. Buildings with fire sprinkler systems installed after 2009 and installed per NFPA 13, Standard for the Installation of Sprinkler Systems: **See Fire Alarm Matrix A.**
2. Buildings with sprinkler systems installed before 2009: Verify compliance of sprinkler system with current NFPA 13 requirements. If compliant with NFPA 13, apply fire alarm requirements for a sprinklered building per **Fire Alarm Matrix A**. If not compliant with NFPA 13, apply requirements for non-sprinklered buildings. See Fire Alarm Matrix B
3. Building without a fire sprinkler system or with a system that is not in compliance with NFPA 13, Standard for the Installation of Sprinkler Systems: See **Fire Alarm Matrix B.**

Approved Materials:

1. Brand Name Specification: In compliance with PPS-49-0870(3) and ORS 279C.345(2), PPS has exempted fire alarm products and systems from the requirements of Public Purchasing Rule PPS-49-0870(1) and established a brand name specification for fire alarm products and systems. PPS may use this specification through July 1, 2023. When purchasing new products and systems for new installations, major renovations, and at its option for existing applications, the District has selected Potter fire alarm products.
2. See fire alarm Matrix A and B for approved materials.

Design Documents:

1. Complete permit level design is required from the A/E firms and must be reviewed and approved by PPS Electric Shop. Design/Build documents are not permissible without prior approval from PPS Electric Shop.
2. Permit level documentation.

3. Permit drawings:
    a. Meet the requirements of the AHJ.
    b. Point-to-point connections and wiring and pathways for notification appliance circuits.
    c. Devices, panels, and annunciators' addresses.
    d. Fire alarm control panels and power supplies power panel and breaker numbers.
    e. Updated battery and voltage calculations based on "as installed" conditions.

Installation Requirements:

1. Meet all current standard, codes and manufacturer's requirements.
2. General Wiring and Installation:
    a. SLC and IDC: 16 AWG, solid, non-shielded. Type FPL, FPLR, or FPLP as required by code.
    b. NAC: 14 AWG only, 2-conductor.
    c. Type FPL, FPLR, or FPLP as required by code.
    d. Conceal wiring, conduit, boxes and supports where installed in finished areas.
    e. Provide raceway system for cabling concealed in walls and hard ceilings and in locations where cabling is exposed. Where exposed, provide surface raceway or powder-coated surface-mounted EMT in finished areas and surface mounted EMT in non-finished areas.
    f. Above suspended ceilings or in attics, wiring may be installed without raceway when allowed by code. Wiring must be supported D-rings or J-hooks closed with zip ties and supported independently from the structure.
    g. Provide raceway system for all vertical wiring.
    h. No condolette fittings are permitted.
    i. Conduit Minimum Size: 3/4-inch diameter.
    j. Provide cabling and conduits system suitable for wet locations for below grade systems. Provide direct burial type cable for underground wiring, even if installed in raceway.
    k. Install fire alarm wiring and conduit a minimum of 12-inches from other electrical wiring and conduit.
    l. Provide 4-inch x 4-inch wireway/gutter at all panels and power supplies.

m. Utilize closet knockout to panel AC power connection for line voltage service to panels.

n. Locate panels' wiring away from battery storage areas.

o. Dedicated circuit breaker: Red, lockable in the "on" position. Provide label with description of equipment served, e.g., FACP, NAC, etc.

3. Addressable Devices:

   a. Addressing: Provide each initiating device, auxiliary input module, and auxiliary output module with a separate address. Do not group any alarm, supervisory, or trouble initiating devices together.

   b. Provide machine printed address labels on addressable devices. Minimum 1/2-inch white tape, black lettering set to largest, bold font. Labels to include SLC number and address, e.g., 2-043.where installed in finished areas.

      i. Labels to be visible from the floor without magnification.

      ii. Locate label centered on head of addressable detectors. If label cannot be centered on head, face the label toward the main entry into the space.

      iii. Locate label centered on top of manual pull stations.

   c. Labels to be visible through protective guards.

4. Fire Alarm Interfaces: Use addressable relays for interfacing to other systems, e.g., HVAC, elevator controllers, etc. Relay bases are not permitted.

5. Fire Alarm Control Panel and Power Supplies:

   a. Label fire alarm control panel as "Fire Alarm Control Panel". Include I-Watch account number and phone number.

   b. Provide instruction charts at each control unit where system operations are performed.

   c. Provide control panel function keys for alarm notification bypass, fire drill, fire door bypass, elevator control bypass, and supervising station bypass, as needed.

6. Installations are to be performed in a professional workmanship manner.

7. System to be tested end to end with the District personnel present. Provide a written report for the District to sign once the system has been accepted.

8. Notification Appliances: Provide machine printed address labels on notification appliances. Minimum 1/2-inch white tape, black lettering set to largest, bold font. Labels to include NAC panel, circuit number and device number on circuit, e.g., 19-N2.5.

   a. Labels to be visible from the floor without magnification label

b. Labels to be visible through protective guards.

Closeout Documents:

1. Warranty letter.
2. Record drawings: Utilize the permit/ shop drawings using the computer aided drafting program for creation of the documents and update. Manually updated redlines or edits made using another electronic program are not acceptable, e.g., Bluebeam pdf redlines. In addition, ensure record drawings show the following information:
    a. On floor plans, provide point-to-point wiring and pathways for all circuits, riser locations and junction boxes.
    b. Devices, panels, and annunciators' addresses.
    c. Fire alarm control panels and power supplies power panel and breaker numbers.
    d. Updated battery and voltage calculations based on "as installed" conditions.
    e. Complete sequence of operation.

ACCESS CONTROL

Design Requirements:

1. The access control system is Kantech by Tyco. Video Intercom is 2N Helios IP Force.
2. Card readers locations are required to be reviewed and approved by Security, IT, and Facilities. Card readers are required at:
    a. All telecom Rooms.
    b. Elevators at each floor stop adjacent to call button *or* inside cab.
    c. All parking gates and primary exterior entrances.
3. Video intercoms and external card readers are required at main entrances, ADA main entries, and auxiliary buildings with main entries. Provide licensing as listed in the Required Materials section.
4. Provide the Valcom 801A-IC Audio Zone Controller to connect the access control to the Informacast as listed in the Materials section. For additional information see the Unlock on Bell-Use and Function Document.
5. Provide door schedule override (DSO)switch for control of all access-controlled doors
    a. Follow PPS wiring diagram for DSO -
        i. Multisite KT-400 Gateway Sites (Elementary/Middle/Small Admin) (Attachment 28-08)

ii. Global KT-NCC Gateway Sites (Large Sites/High Schools/Large Admin) (Attachment 28-09)

6. The access control is integrated with the intrusion system.
    a. Coordinate with Security Services
7. All controllers are linked together with an RS 485 bus. The Access Control System will be designed to use a single IP address for all controllers.
8. All elevator card readers are to be on a dedicated controller. Doors are not to be added to this controller. Clearly label “Elevators only. Door connections prohibited”.
    a. Provide elevator access control override switch. This switch will provide access during events and when Access Control System is offline. Switch should be located in a secure location.
9. Access control controllers are to be placed in the nearest telecom room. Controllers are to be on a dedicated circuit (which can be shared with the Intrusion system), have battery backup and be on the emergency generator.
10. The system designer must create an access control matrix that includes but is not limited to: Door number, location, door hardware group, door function and programming. See attached for example.
11. Access control card programming is to be provided to the District. PPS Security will program all cards.
12. Door contact switches with request to exit devices are required on:
    a. All exterior doors with access control
    b. Interior doors with access control.
13. Door contact switches are required on all exterior doors.
    a. Door contact switches connect to the access control system.
14. All buttons/switches to be installed in ADA compliant locations.

Approved Materials:

1. Access Controller: Kantech KT-400.
    a. For panel controlling main entry door and any Kantech that controls an ADA door include KT-MOD-REL8
2. Network Communication Controller: KT-NCC
3. Security Management Software: Entrapass Global Edition 7.42 or as approved by the IT Department.
4. Card Reader

a. HID RP40 Wall switch
b. HID RPK40 – Wall switch Keypad
c. HID RP15 - Mullion
d. HID RP 10 - Mini Mullion

5. Cards: HID iClass.
6. Relay to Informacast.
    a. Valcom 801A-IC Audio Zone Controller
        i. Informacast: One for lockdown and one for bells to unlock.
7. Power Supply: Altronix AL600 ULACMCB.
8. Door Contacts: GE-Sentrol: 1078 CW.
9. DSO Button with label “Door Schedule Override
    a. DSO Button for KT-400/Multisite Gateway
        i. STI Stopper Station: SS2329NT-EN
            1. White with indoor cover, turn to reset, No text, English
    b. DSO Button for KT-NCC/Global site
        i. STI Stopper Station SS2325NT-EN
            1. White with indoor cover, Momentary Illuminated, No text, English
10. Video Intercom (Call Box): 2N Helios IP Force:
    a. 2N Helios IP Force:
        i. 1 Button - Axis P/N 01337-001
        ii. 2 Button - Axis P/N 01340-001
    b. Security Screw Set: Axis P/N 01345-001
    c. Additional Switch and Tamper: Axis P/N 01350-001
    d. 2N Helios IP Gold License: Axis P/N 01380-001
    e. NVR License: EVENIP-01 (Confirm with District).
11. Cable: All in one, or Banana type cable. Must have 4C 18awg (Lock power), 3P 22awg (Card reader), 2C 22awg (Door contact), 4C 22awg (REX).

Installation Requirements:

1. Integrated access control contractor:
    a. For the Access Control System (ACS) scope of work, each project shall engage a single Kantech Global Certified contractor. This ACS contractor shall be responsible for:
        i. Furnishing and installing all Kantech-specific access control components.
        ii. Performing all ACS cabling, wiring terminations, connections, and labeling, including connections to door hardware specified in Division 8.
        iii. Generating shop drawings and as-built documentation.
        iv. Completing all PPS Office of Technology and Information Systems (OTIS) required ACS documentation, including programming data, in the Google Sheets provided by OTIS.
        v. Conducting pre-functional testing of all system components, and providing status in the OTIS provided form.
        vi. Serving as the primary point of contact for ACS troubleshooting and issue resolution, and coordinating between all parties, including the GC, other trade partners, and OTIS.

~~1.~~2. Meet all current standards and codes.

~~2.~~3. Security cabling is to be in 1-inch EMT conduit within walls, inaccessible ceilings and open to structure areas.

~~3.~~4. All controllers are to have battery backup and be on a dedicated 110 VAC, 20 amp circuit that is connected to the emergency generator (when available).

~~4.~~5. Install DSO Button

~~5.~~6. Install KT-NCC at High School Sites

~~6.~~7. All access controllers are linked together with an RS 485 bus.

~~7.~~8. 2N Helios units will have Category 6 cable for ethernet access, terminating at the patch panel in the nearest Telecom Room, and one 18/4 cable for the call box ran to the KT-400. Refer to attached wiring diagram “2N Kantech Wiring” for example.

~~8.~~9. Access control doors will require a Combo Cable (Item 11 under approved materials).

~~9.~~10. Coordinate all card readers with power assisted doors so that the door operator does not function without a valid card read while in secure mode. Installations are to be performed in a professional workmanship manner.

~~10.~~11. System to be tested end to end with the District personnel present. Provide a written report for the District to sign once the system has been accepted.

~~11.~~12. All card readers will be labeled sequentially:
    a. Label to include CR-Floor Number-Sequence Number
        i. CR-01-01 (First card reader on the first floor)

ii. For floors below the main floor use SB (sub-basement) B (basement)

b. Labels to be visible from the floor without magnification label
c. Labels to be visible through protective guards.
d. All devices to be located on a site plan with corresponding numbers.

~~12.~~13. All Call Box devices will be labeled sequentially:

a. Label to include CB-Floor Number-Sequence Number
   i. CB-01-01 (First call box on the first floor)
   ii. For floors below the main floor use SB (sub-basement) B (basement)

b. All devices to be located on a site plan with corresponding numbers.

Closeout Documents:

1. Warranty letter.
2. Record drawings (As-Built) showing device locations, cable routing and labeling.

INTRUSION DETECTION

Design Requirements:

1. The intrusion system is DSC power series Pro, 128 zone.
2. All device cabling is an independent home run to the panel.
3. The main panel is to be located in the MDF and zone expanders/power supply panels are to be in any applicable Telecom Rooms.
4. Dual technology motion sensors are required in Computer Labs, Maker Spaces, Metal Shops, Wood Shops, Auto Shops, Photo Labs (ground floor only), and other space with equipment and technology, Main Office area, Principal and Vice Principal offices (if separate from the office area), full coverage of all hallways on the lower levels and areas that can be reached from roofs or stairwells. 40-foot by 40-foot coverage pattern minimum.
5. Keypads will be utilized for arm/disarm and need to be placed in a non-public area. Locations are to be coordinated with PPS.
6. Programming and partitioning is by PPS Electrical Shop and Security.

Approved Materials:

1. Intrusion Control Panel – 128 Zone - DSC-HS3128.
2. Power Supply – DSC-HS65WPSNA
3. Power Supply Module: DSC-HSM2300.
4. Cabinet with lock (544 key) – DSC-HSC3020C
5. PRO 8-Hardwired Zone Expander Module: DSC-HSM3408.
6. LCD Hardwired Keypad: DSC-HS2LCDPRO.
7. Door Sensors, Interlogix – 1078CW
8. Door / Window Sensors, Interlogix – 1042TW
9. Motion Detectors: Optex DX-40/DX-60 (based on room size) or approved equivalent (Electrical Shop).

Installation Requirements:

1. Meet all current standards and codes.
2. Security cabling is to be in 1-inch conduit within walls, inaccessible ceilings and open to structure areas.
3. All controllers are to have battery backup and be on a dedicated 110 VAC, 20 amp circuit (that can be shared with the access control system) that is connected to the emergency generator (when available).

4. Installations are to be performed in a professional workmanship manner.
5. System to be tested end to end with the District personnel present. Provide a written report for the District to sign once the system has been accepted.

Closeout Documents:

1. Warranty letter.
2. Record drawings showing device locations, cable routing and labeling.

VIDEO SURVEILLANCE

Design Requirements:

1. The IP Video Surveillance System is based on Exacq NVR and approved IP cameras.
2. Cameras will be fixed, multisensor in intersections and other areas that require multiple views. Fisheye type cameras are not to be used. All other cameras will be fixed.
3. Cameras will be a minimum 4-megapixel resolution (Per Lens), 15 frames per second, and 2.8~12mm motorized lens.Cameras to be provided at the following locations:
    a. All restroom entries including single occupancy.
    b. Main entry; interior.
    c. Childcare entry; interior.
    d. Stairways or entry to enclosed stairways interior.
    e. Exterior enclosed courtyards
    f. Gymnasiums – interior, covering bleachers and entries.
    g. Cafeteria/Commons; interior covering major seating areas.
    h. Interior and exterior large gathering areas.
    i. Corridor/hallway intersections; interior.
    j. Elevators: inside cab displaying entire cab, controls & entry door.
    k. On site bus loading zones; exterior for new construction only.
    l. Parking space/lots that are adjacent to school building.
    m. Playgrounds/Covered play.
4. Exterior cameras to be mounted at a minimum of 12-feet above finished grade.
5. Camera placement to be reviewed and approved in writing by Security, IT, and Facilities.

6. An owner furnished viewing monitor and computer will be placed in the main office with preset views of building entries. Set up to be reviewed and approved by Security, IT, and Facilities.
7. Surge Protection
    a. Provide rack mountable Category 6A surge protector in the Telecom Room.
    b. Ground surge protector assembly to nearest grounding busbar.
    c. Provide surge protection submittals to the District prior to installation.

Approved Materials:

1. Multisensor IP Camera: 8+ megapixel with one IP address, flexible positioning of varifocal camera heads, 15 FPS, PoE, day/night functionality, color, indoor/outdoor rated, vandal proof housing with associated licensing.
2. Fixed IP Camera: 4+ megapixel, wide dynamic range, 15 FPS, PoE, day/night functionality, color, indoor/outdoor rated, remote zoom, vandal proof housing with associated licensing.
3. NVR and VMS software: ExacqVision sized per the following: Total number of video steams at full resolution, 15 FPS, 30-day storage, H-264 compression rate and 20-percent spare capacity. Approval by IT and Security is needed if more than one server is used per site.
4. Cabling: Category 6A – color yellow. Manufacturer to match Division 27 or be approved in writing by Security, IT, Facilities and the Electric Shop. Cable to originate from the nearest Telecom Room and not exceed 90M.
5. Viewing Monitor: LCD, 4K, 16:9 aspect ratio, minimum 55-inch.
6. PoE switches: Furnished by the District.

Installation Requirements:

1. Meet all current standards and codes.
2. Camera cabling is to be in 1-inch conduit within walls, inaccessible ceilings and open to structure areas.
3. Camera cabling to be terminated on a rack mounted patch panel in the Telecom Room and a Category 6A jack in a single gang faceplate on the camera end. Cable to be labeled with a machine printed label on both ends and tested end to end with a Level IV tester. Provide printed test results to the District.
4. Confirm each camera location and field of view with Security, IT, and Facilities prior to installation.

5. Include one final adjustment after installation based on PPS Security, IT, and Facilities review.
6. Installations are to be performed in a professional workmanship manner.
    a. Cameras are to be setup, programmed, bench tested and verified functional before installation and connection to the network.
7. Install the LCD monitor in the main office. Verify location with Security, IT, and Facilities.
8. Install all District supplied PoE switches if directed; otherwise District will install. Contractor to coordinate.
9. All cameras will be labeled sequentially
    a. Label to include SC-Floor Number-Sequence Number
        i. SC-01-01 (First security camera on the first floor)
    b. For floors below the main floor use SB (sub-basement) B (basement
    c. Labels to be visible from the floor without magnification label
    d. Labels to be visible through protective guards.
    e. Each camera location and identifying number will be recorded on a site map.
10. Install surge protection systems in accordance with manufacturers installation instructions and ANSI/TIA-607 (current edition) procedures. Follow the more stringent standard.

The video surveillance system is to be fully installed, patched and programmed prior to turning over to the District.

Closeout Documents:

1. Warranty letter.
2. Record drawings (As Built) showing device locations, cable routing and labeling.
3. Category 6A test results.
4. Camera licensing.

CAMPUS NOTIFICATION PANEL

Design Requirements:

1. Please see the Attachment 28-7 Campus Notification Panel for information about this requirement.
2. Install one hinged electrical enclosure that has at least one 2” conduit to the MDF and conduits to 6 single gang boxes adjacent to the electrical enclosure.
    a. Where possible the electrical enclosure and single gang boxes should be flush mounted.

b. One surface mounted Ethernet jack will be installed inside the electrical enclosure with a 3' service loop of CAT6 or better

i. Terminate in the MDF patch panel

1. Include pull string in conduit, for future use.

3. Install 6 single gang boxes

a. Box 1 – stainless steel phone wall jack plate

i. CAT6 or better cable that is run to the analog phone distribution blocks in the MDF.

ii. The box location will be ADA compliant.

iii. PPS will provide a Red wall phone for this.

b. Box 2 – DSO Button (White)

i. Install 18/6 to MDF KT400

ii. Follow DSO Install Directions

iii. KT-NCC sites need an additional button for reset.

iv. KT-NCC sites also need Card Reader for DSO reset

c. Box 3 – Blank plate (Future – Lockdown – Red)

i. Install 18/6 cable to MDF KT400.

d. Box 4 – Blank plate (Future – Lock Out – Blue)

i. Install 18/6 cable to MDF KT400.

e. Box 5 – Blank plate (Future – Team Response LD – Green)

i. Install 18/6 cable to MDF KT400.

f. Box 6 – Blank plate (Future – Evacuation – Yellow)

i. Install 18/6 cable to MDF KT400.

4. Boxes will be mounted with at least 2" clearance between them.

5. Boxes will be mounted to be ADA compliant.

6. These boxes will be used to mount STI stopper buttons for emergency notifications.

END