PART 0 DESIGN STANDARDS

0.01 GENERAL DESIGN GUIDELINES

A. Inspections and observations by the Owner do not relieve the A/E of contract responsibilities.

B. Chain of command

1. The DPS Project Manager is the Owner's representative for security systems. Neither the A/E nor the Contractor shall take direction directly from the DPS Office of Safety & Security (Security Project Manager) without approval of the Project Manager.
2. Work under this standard is also governed by other Division 17 standards which are generally managed by the DPS Department of Technology Services (DoTS). Neither the A/E nor the Contractor shall take direction directly from the DPS DoTS Project Manager without approval of the Project Manager.

C. This standard includes guidelines for three types of security systems

1. Surveillance systems: Generally camera systems
2. Intrusion systems: Generally motion detectors, door contacts, and other forms of intrusion detection.
   a) Subcategory: Industrial supervision
      i) Moisture detection
      ii) Flood controller monitoring (backflow preventers)
      iii) Carbon dioxide detection
      iv) Elevator emergencies (notification only; response is handled through 911)
3. Access control systems: Generally electronic door controls, card readers, and intercom

D. Security system wiring, structured cabling, equipment, devices, main panels, conduit, raceways, and other system components are normally provided under the general construction contract.

1. Exception: The Owner will perform final terminations and programming at the security control panel.

E. Also refer to standard security system drawings.

F. Extensive cross-coordination by the A/E is required between security systems and other building systems, including but not limited to

1. Structured wiring for security systems: Other Division 17 standards
2. Electrical service 110 volts and above (line voltage): Division 16 standards
3. Door hardware: Section 08700
4. Library book theft detection
5. Industrial supervision: Various standards
6. Flood control for backflow preventers: Division 15 standards

G. Security equipment, device, and panel locations shall be coordinated with the DPS Project Manager.

1. General location guidelines for motion detectors
   a) Locate motion detectors on ceilings or other horizontal surfaces.
   b) Locate motion detectors to provide maximum coverage.
   c) Locate motion detectors to avoid false alarms due to moving fans, heaters, blowers, direct sunlight and other such sources of interference.

d) Avoid motion detector locations that face toward overhead doors or glass facing the exterior of the building.

2. General location guidelines for door contacts

a) Boiler room exterior door

b) Chiller room exterior door

c) Penthouses

d) Roof access points

H. Power operated and power assisted door operators are prohibited. Refer to door hardware standards.

I. Provide the following at each controlled access building entrance

1. Electronic latch device for release of panic hardware latches upon operator signal (refer to door hardware standards)

2. Video camera

3. Intercom with doorbell between the entrance and the operation location (normally the building secretary)

a) Permanent sign indicating purpose and use of intercom (refer to sign standards)

J. For modular classroom buildings, provide controlled access components noted above, plus additional cameras that may be necessary to view the entire path between each modular building and the nearest building entrance.

K. Card reader access systems

1. Confirm card reader locations with the Owner.

a) New buildings shall have card readers at exterior entry doors, at the elevator, and at the Main Distribution Frame (MDF) and Intermediate Distribution Frame (IDF) telecom room doors. Coordinate specific locations with the DPS Project Manager. Exterior door locations often include the main building entry, Grand Master entry, ECE and Kindergarten exterior doors, and main entry from parking lot.

2. The Owner will provide listing of approved card reader equipment and software manufacturers.

3. Provide proximity readers, not swipe readers.

4. Provide key backup.

5. Consider providing rough-in for future card readers.

L. Coordinate building interior lighting and site lighting, relative to security sytems, with Division 16 lighting standards.

M. Provide a 12" x 12" x 6” deep junction box with screwed cover above the main security panel for field device terminations.

N. The main security system panel and auxiliary devices shall be powered by a dedicated circuit from the emergency panel.

O. Provide circuit breaker lockout device on each power circuit.

P. Provide uninterruptible power supply (UPS) backup, power surge protection, and automatic reboot after power outage for the following

1. Surveillance equipment including camera power supplies

2. Card reader equipment

Q. CCTV monitor and flat screen TV mounting: Refer to audio visual equipment standards.

R. Key boxes
   1. Refer to other standards for Fire Department Knox Box guidelines.
   2. The Owner will provide two key boxes close to the main security entrance (also called the Grand Master or Custodial entrance)
      a) One key box for exclusive use of the Office of Safety & Security
      b) One key box for use of building staff and off-hours facility monitors
   3. The Owner will provide one key box close to the kitchen entrance for use of DPS Food & Nutrition Services staff.

S. Door bells
   1. Generally used only for kitchen food service delivery entries
   2. Shall be designed and specified under other Division 16 sections.
   3. Coordinate with security system requirements.
   4. Electronic door controls (including intercom, electronic door latches, and cameras) are preferred over door bells.

T. Cable guidelines (also refer to standard drawings)
   1. Where 20 feet of coiled cable is required, support coiled cable above the ceiling (at ceiling level if no finished ceiling) before making final cable termination.
   2. Video drops
      a) One Category 6-4 pair and one 18 gauge - 4 conductor, shielded, stranded, plenum rated cable
      b) Terminate drop at nearest telecom closet in the Panduit patch panel with other Category 6 terminations.
      c) Terminate device end of Category 6 cable with Panduit RJ45 minicom jack and 20 feet of coiled cable.
      d) Provide 20 foot coil at each end of 18 gauge cable.
   3. Intrusion drops
      a) 22 gauge - 6 conductor, stranded, plenum rated cable
      b) Originate from either a Module or the Main Control.
      c) Provide 20 foot coil at each end of each cable.
      d) Indicate each panel and module on the drawings with letter designations such as A = Main Control; B = Module B; C = Module C, etc.
   4. Door lock drops and intercom drops
      a) Obtain current standards from the DPS Project Manager.
   5. Keypad drops
      a) 22 gauge – 6 conductor, stranded, plenum rated cable
      b) Originate from main control panel.
      c) Provide 20 foot coil at each end of each cable.
   6. Module drops
      a) 18 gauge – 6 conductor, stranded, plenum rated cable

b) Module B must originate from main control panel. If installing more than one module, additional modules (labeled C, D, etc.) may be daisy chained from Module B or a subsequent module which originated from Module B, or may connect to the main control panel

c) Provide 20 foot coil at each end of each cable.

PART 1 GENERAL

1.01 INSTALLER QUALIFICATIONS

A. Cable may be provided by the same Contractor or Subcontractor performing structured cable installation. Refer to Division 17 standards for structured cable requirements.

B. Line voltage electrical wiring systems shall be installed by licensed electricians.

C. When applicable, card reader installation shall be by an installer licensed by the City and County of Denver. Coordinate with current Authorities Having Jurisdiction (AHJs).

D. Installer certifications: Manufacturer certifications may be required for installation and programming of certain types of equipment.

1.02 WARRANTY

A. Standard DPS 18 month construction warranty applies.

PART 2 PRODUCTS

2.01 MATERIALS

A. Obtain current equipment specifications from the DPS Project Manager. The Project Manager will obtain the current specs from DPS Security Project Manager.

B. Refer to standard security system diagrams for cable and wire materials, cable color coding, and additional materials information.

C. Cable requirements not indicated on security system diagrams:

1. Cable from main security panel to backflow preventer flood controller alarm panel: 18 gauge, 4 conductor, plenum shielded

2. Cable from main security panel to main office key pad: 22 gauge, 6 conductor, plenum shielded

2.02 IDENTIFICATION AND TAGGING

A. Color coding cable and wire

1. See standard security drawings

2. Intrusion devices

a) Blue + brown: DC power

b) Black + red: Alarm circuits

c) Green + white: Terminated

3. Modules

a) Red + green: Polling loops

b) Black + white: Device power

c) Blue + tan or orange: Siren power

B. Wire and cable identification

1. Identify wire and cable per Telecom Standards.

2. Label both ends of each wire and cable to identify the device it feeds.

C. Labeling

1. Label the emergency panel circuit serving the security equipment.
2. Permanently label each power supply, device, equipment item, UPS, junction box, and module.

PART 3 EXECUTION

3.01 FIELD QUALITY CONTROL

A. Before security system work commences, a pre-installation conference shall be held with the DPS Project Manager, the Contractor, the A/E, the security contractor's on-site representative, the structured cabling contractor's on-site representative, the DPS Security Project Manager, and the DPS DoTS Project Manager.

B. Notifications by Contractor

1. Notify the A/E and the DPS Project Manager of the following with 72 hours minimum notice.
   a) Commencement of wire and cable installation
   b) Commencement of device and equipment installation

3.02 INSTALLATION

A. Wire and cable installation shall be according to the DPS Telecom Standards

B. Prior to installation, coordinate specific locations of equipment and devices on site with DPS representatives.

C. Suspension and anchorage

1. Use of percussion actuated fasteners is prohibited.
2. Attach cameras to vertical walls and other suitable vertical surfaces. Do not attach cameras to horizontal surfaces.
3. Steel roof and floor decking, suspended ceilings, and hollow assemblies shall not be used for the attachment of anchorages or supports for suspended equipment, devices, or other security system components.
   a) Exception: Attachment, anchorages, or supports specifically approved by a Structural Engineer.
   b) Exception: Where attaching to a suspended ceiling, attach the back box or device with a box support bar.
4. Drilling, cutting or burning of, or welding to, structural members for attachment of hangers and supports is subject to prior approval by the A/E.

3.03 SYSTEM COMPLETION

A. DPS will perform final wiring terminations and system programming.

B. Contractor shall provide assistance to DPS during final wiring and system programming in the event changes need to be made to the system.

END OF SECTION