SECTION 00 08 00

SECURITY DESIGN GUIDELINES

Minimum Security Standards for Systems

❖ Note: Due to the ever changing technology associated with security systems, this is a working document. Please obtain a new copy at the onset of each new project.

Purpose

This document defines the minimum security criteria required for DPS owned and leased facilities and the spaces and assets within those facilities. This document applies security measures consistently throughout all DPS spaces and is an integral part of the planning, design, and construction of all projects. An objective of this manual is to provide cost effective design criteria that provides an appropriate level of protection to each facility. The criteria set forth in this guide are to be taken into consideration during design process and exist in addition to all other District policies and local, state, and federal guidelines and building codes. It is meant as a supplement to the Denver Public Schools Design and Construction Standards, https://facilities.dpsk12.org/construction-services/ specifically Section 28 00 00 – Electronic Safety and Security.

Scope

Building security encompasses how assets (i.e., people, information, and property) can be protected from the effects of malevolent acts carried out by individuals or groups of individuals. Design guidelines shall include forethought to include the following components; deterrence, delay, and detection.

This document is designed to be a guideline which applies to any DPS educational or administrative facility. It does not differentiate between elementary schools, middle schools, high schools, or charter schools. Architects can make specific adjustments based upon the unique needs of the facility. These standards apply to new construction and all additions, alterations, and modernizations. The criteria used in this document is based on risks common to educational facilities and are consistent with other standards developed for these types of facilities. Additionally, this document recognizes risks are unique to each facility and the assets that they may house. Therefore, the criteria developed will vary by facility type, space usage, and risk categorization.

Site Perimeter

The site perimeter is part of the school grounds contacting the street and adjacent property. It defines the initial impression of a school and communicates to the public a message of accessibility or inaccessibility. The perimeter also marks the outermost line that can be protected by security measures incorporated during the design process.

Design Considerations

• Establish a defined perimeter around the school building from the building as feasible. Use layered edge treatments such as fencing, landscaping, and ground surface treatments.

• Use symbolic markers such as archways, entry posts, and student artworks to create psychological boundaries.

• Minimize the number of vehicle access points.

Joint-Use or Shared Facilities

Special consideration should be taken in the design of schools with joint-use or shared facilities such as playgrounds and recreational areas which are accessible to the community during and/or after school hours. It is critical to create boundaries between the community and the school by establishing a distinct perimeter for both the school and the joint-use facilities with separate and secure access points. Properly designed joint-use facilities can reinforce ownership and territorial integrity. Consider the following when establishing perimeters for shared facilities:

• Separate entries for facilities with frequent public use (e.g., gymnasiums, multipurpose rooms, libraries, auditoriums, and swimming pools).

• Zone alarms for after-hours activities.

• A separate perimeter for after-hours activity areas, play field, and common spaces to keep other parts of the school secure.

Entrances

• Clearly establish and define school property lines with limited access at select entry points.

• Design the campus perimeter so visitors and guest must pass through a particular point of entrance.

• Locate entry points in highly visible areas so they can be monitored by staff and students in the course of normal activities.

Physical Barriers

• Use physical barriers to deter unauthorized access and resist vandalism.

Fencing

• Use fencing that does not permit footholds. Chain link fence shall utilize small mesh 1-inch to 1 ½-inches).

• Carefully choose materials for fences and landscaping that provide opportunities for natural surveillance and access control.

Parking Areas, Pedestrian Routes & Vehicular Routes

Vehicular routes and parking areas include the primary entry drive, parking lots, bus loading zones, parent drop-off/pickup areas, and service and delivery drives. Safe and convenient access to the school for students, parents, visitors, and community users must be a priority in designing a school site. The following areas of a school should be separate, distinct, and marked well to avoid potential problems:

• Student walkways

• Bus unloading and parent/student drop-off areas

• Special needs student drop-off

• Delivery areas

• Parking for students, staff, visitors, and community users

• Outdoor activity area access for students

• Separate vehicular and pedestrian routes by creating barriers and well-defined routes.

• Ensure parking areas and vehicular routes are adequately lit with vandal-resistant lighting.

• Designate separate parking lots for student use, especially for high schools, in order to monitor students who may leave campus during school hours. Secure these parking lots and, if possible, supervise during peak- use times.

• Avoid long, straight parking layouts that allow cars to speed through the lot endangering pedestrians or, if unavoidable, use speed bumps.

• Place parking areas in close proximity to school buildings to facilitate visual surveillance from classroom and administration area. Provide the administrative areas and classrooms with windows overlooking parking areas

• Locate windows in school buildings along exterior pedestrian routes wherever possible to encourage surveillance and reduce the potential for undetected trespassers, vandalism, etc.

Signage

Signage is a critical element for controlling access on school campuses. Proper signage can reduce confusion over site circulation, parking, and entrance locations, thus reducing the number of people wandering into restricted areas.

Consider posting the following signs:

• Clearly marked entry signs to school grounds and/or school buildings indicating to visitors what is expected of them, including rules governing access and impermissible behavior as well as applicable local and state regulations.

• Signs numbering each entrance to the school to assist emergency responders during an incident.

Signage

• Traffic regulatory and directional signs controlling traffic flow and directing vehicles to specific appropriate points.

• On-site directional, parking, and cautionary signs for all who utilize the campus.

• Welcome signs directing visitors to main entry and administrative office as well as to an emergency contact point.

• Signs declaring school grounds as drug-free and gun-free zones.

• Signs indicating the penalty for trespassing.

Sign Elements

Keep the following points in mind when designing campus signage:

• Do not block vision at intersections.

• Display street addresses or building numbers instead of detailed descriptive information about the school grounds.

• Include other commonly spoken language(s).

• Post warning signs at intervals of no more than 100 feet.

• Ensure signs do not block lines of sight.

• Provide lighting designed to enhance natural surveillance near signage.

• Use large lettering and bold graphics with simple directions.

• Design signage to eliminate spaces permitting concealment.

Landscaping and Vegetation

Without proper planning and maintenance, landscaping may become a security problem by creating places to hide, blocking lighting, and interfering with lines of sight necessary for natural surveillance. Misplaced landscape elements may also encourage vandalism. Many landscape features, however, can be used in school design to enhance security. Elements such as landforms and vegetation can be used to define or designate space, provide some level of blast shielding, and to deter or prevent unwanted surveillance and unauthorized access.

Landscaping can also be a cost-effective method of access control. A row of trees with low-level plants can define an edge leading to an opening or entrance. Landscape materials such as boulders, mulch, and timbers can also effectively delineate spaces and control access at a lower cost than fencing or walls.

• Keep trees at least 20 feet from buildings to prevent window and roof access. If possible, do not plant trees near building, keep around site perimeter.

• Where planting is used next to windows or doors, use only low growing plants or high-branching deciduous trees at a distance which will not allow roof access.

• Avoid using dense vegetation close to buildings, as it may screen illicit activity.

• Grout landscaping stones and masonry materials so they cannot be removed by hand and used as weapons or in the commission of crimes.

• Limit shrubbery to a maximum height of 3 feet and trees to a minimum height of 6 feet at the lowest branches to ensure unimpaired visibility between three and 6 feet from the ground.

Points of Entry

The most effective way to prevent points of entry from being a security threat is to minimize the quantity. Providing only one entryway is not realistic nor safe for schools, other mitigation measures are necessary to secure multiple points of entry.

General Design Considerations

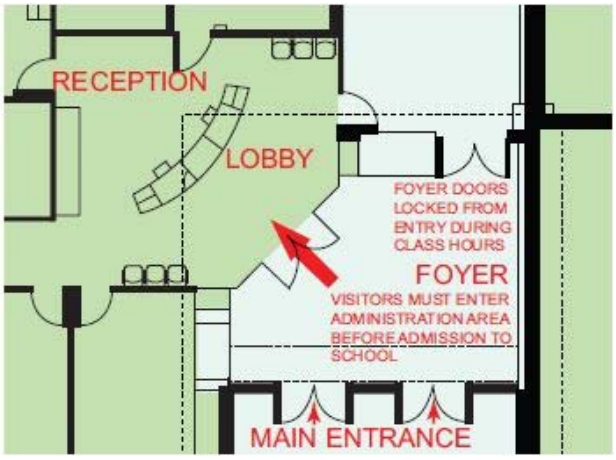
All points of entry must incorporate features to enhance security and control who enters and leaves the buildings. When designing an entrance, keep the following points in mind:

• Control entry access with a combination of direct supervision, limited points of entry, and security technology.

• Minimize the number of unmonitored entrances into the building.

• Locate entries so key areas (i.e. parent drop-off, parking, waiting zones, administration, have multiple points of surveillance.

• Provide adequate space at entries for security screening, queuing, equipment, and thorough investigation of students if necessary.



• Provide adequate illumination with vandal resistant fixtures.

• When using a campus-plan design, secure all entry points

• Require visitors to pass through at least one close-up visual screening before they can access to bathrooms, service space, stairwells, or other amenities inside the school.

• Control access into the building through designated, supervised, or locked entry points, including windows and service entries. Grant entry by permission of supervising staff or by use of proximity cards, keys, and intercom devices.

Minimum Standards

This section lists the minimum standards that should be applied.

Burglar Alarm

The burglar alarm includes motion detection and door contact sensors. These devices provide alternative methods to detect actual or attempted intrusion into protected areas through alarm components, monitoring, and reporting systems.

Bosch main panels currently in use, see approved system equipment below.

• Motion detectors

- 360° technology at entrances, main office, and classrooms as needed.
- Long range technology in hallways.

• Door Contacts/Position Switches on every door allowing entry/exit to the building. Mount position switches on the latch edge of the door within six inches of the latch edge. With double doors, fit each door with a separate contact sensor. Doors controlled by entry control devices require coordination of intrusion detection with authorized accesses to preclude nuisance alarms for authorized entries. Surface mounted position or balanced magnetic switches shall have armored cabling from the sensor to a junction box location adjacent to or above the opening.

• Duress Alarm Switch in Main Office.

Video Surveillance

Video Insight video management system currently in use, see approved system equipment below.

Proper placement of surveillance cameras is crucial and must be included in the following areas:

• Cafeteria – serving area, seating area, designated entry and exit areas.

• Student restroom entrances. Consider restroom design placement where natural surveillance can also occur (i.e. primary corridors and administration areas).

• Stairs and Stairwells. Provide open or see-through handrails and guardrails on stairs, balconies, ramps, and upper-level corridors to allow natural surveillance and eliminate hiding places.

• Main office.

• Elevator landing/lobby.

• Parking lots, roof top mounted cameras.

• Playgrounds, roof top mounted cameras.

• Student and visitor entries.

• General coverage for building exterior.

Access Control

Open Options access control management system currently in use, see approved system equipment below.

The function of an access control system is to permit authorized personnel into or out of a controlled area. All access control systems control passage by using one or more of the three factors of identification (something a person knows, something a person has, or something a person is or does). Automated entry control devices based on these factors consist of two (2) categories: code and credential.

- ❖ Equip identified access doors with conventional key and lock systems for manual override in case of system failure.
- ❖ Install latch guards to protect the electric strike and door bolt that are susceptible to tamper or picking from outside the protected space.

• Main Entrance

• Staff Parking Entry

• ECE Classroom Entry

• Kaleidoscope/ECE Program Entry

• Playground/Cafeteria entry.

• Elevators, floor call only unless specific floors are restricted, then include exit as well.

• All Telephone/Data Rooms and any doors leading to these rooms for after-hours access.

• Prep all exterior doors that allow entry into the school for future card access.

Intercom

AXIS intercom products currently in use, see approved system equipment below.

• Cisco Video Telephone

- Main office

• Door(s)

- Main visitor entry
- ADA entry if different from main entry

AED

- Install AED (Automated External Defibrillator) outside of Main Office mounted at ADA level (See parts list for current model)

Wi-Fi

• Cover all exterior parking lots with DPS wireless network technology. Use external WAP's.

Cabling – All Systems

❖ All Cabling shall be Plenum rated.

• Video Surveillance – Panduit/General Cable Category 6. Install cabling to closest telephone/data room.

• Burglar Alarm – 4 conductor/22 AWG stranded for door contacts. 4 conductor/22 AWG stranded for motion detectors and keypads. 6 conductor/18 AWG stranded + shielded for panel to module and module to module. Category 6 from panel to data rack for phone line. Install cabling to closest telephone/data room.

• Access Control – Panduit Category 6. Install cabling to closest telephone/data room.

• Intercom – Panduit Category 6. Install cabling to closest telephone/data room.

General Notes – All Drawings

A. All cabling shall be routed in concealed accessible ceilings, raceway, or cable tray.

B. All conduit sleeves and fire-stopping necessary for a complete system (not already provided) are the responsibility of this contractor.

C. Cables shall be supported from a structure via approved J-hooks where no cable tray is present. Do not support solely from structural elements. All cable shall be in conduit or supported by cable tray or j-hook.

D. Provide conduit sleeves as required, not shown. Any penetrations through walls shall be sleeved. Provide fire-stop on all sleeves. Provide bushings on all sleeves.

E. Vinyl tie straps are prohibited. Utilize plenum rated, Velcro type tie straps to bundle cables throughout the facility.

F. Cable ends shall be labeled.

G. At exterior CCTV camera locations, provide J-box rough-in. For all locations, provide orange plenum rated patch cord. Provide one (1) data drop. Data jack to be terminated inside building prior to exterior wall penetration for exterior applications. Use patch cord from exterior CCTV to data jack inside building. Provide required mounting hardware.

H. Exterior double door preparation – all exterior double doors and frames to be supplied with and prepared for center mullion mounted electric strike. One (1) - ½" conduit prep location device box above accessible ceiling. Provide Styrofoam blocking in frames that will be filled. Electric strike on one door only; right hand side looking at door from outside.

I. Exterior single door preparation – One (1) - ½" conduit from frame mounted electric strike to device box above accessible ceiling. Provide Styrofoam blocking in frames that will be filled.

J. All exterior doors – One (1) - ½" conduit from recessed door contact switch to interior accessible ceiling.

K. Access controlled doors/frames and related power supply shall be identified by DPS master drawings (plan room/archives) door tag number with nameplates in accordance with section 10426 – signage and graphics.

Flag Notes - All Drawings

1. Exterior wall mounted camera with flush mount, single gang, weatherproof J-box for camera. ¾" conduit into accessible interior ceiling space w/bushing. Mounting height within 12-14' unless otherwise noted.

2. Interior wall mounted camera with flush mount, single gang, J-box for camera. ¾" conduit into accessible ceiling space w/bushing. Mounting height within 8-10' unless otherwise noted.

3. Parapet mounted J-box for camera. Provide 3/4" conduit through parapet wall into accessible ceiling space, terminated in weatherproof box mounted to Uni-strut framing for parapet camera. Verify mounting location with DPS prior to rough-in.

4. Data jack at security panel. Mount within panel.

5. Duress alarm switch, connect to security system.

Special System Legend

See Division 28 05 00-1

Preferred Equipment List

All equipment including monitoring devices, card readers, power supplies, burglar alarm panels, recording and storage, cameras, and related data processing equipment and computer hardware are defined in this Preferred Equipment List.

The purchase of all equipment will comply with this list. The compliance policy is exception based and requires clear documentation from procurement to justify any purchase that deviates from the list. Approval must be obtained in writing from the Project Manager.

Manufacturer	Part Number	Description
Cameras		
Panasonic	WV-S2131L	Interior Camera
Panasonic	WV-S2531LN	Exterior and gymnasium camera
Panasonic	PWM485S	Wall Mount kit
Panasonic	PCM485S	Corner Mount kit
Panasonic	PS485S	Pendant Shroud
Pelco	PP451	Roof Top Sled "Gravity" Mount w/weight material
Panasonic	PPRM30GB	Parapet Mount
Rohn	FRM238SP5	Gravity Sled
Rohn	FRMPAD	Gravity Sled Mat
Rohn	FY253	Mast
Vigitron	Vi2701TX	PoE Ethernet Extender transmitter
Vigitron	Vi2701RX	PoE Ethernet Extender receiver (may need for parking lot pole mounted cameras)
Vigitron	Vi0012	12 VDC Wall-mount Power Supply
Power Supply's		
Lifetime Series Pro	FP0150-E1	Dual Voltage Power supply
Altronix	AL400ULX	Main Control Power Supply/Charger
Altronix	AL600ULXB	Mercury EP1502 Power Supply/Charger Board
Access Control - Intercom		
AXIS	A8004-VE	Video Intercom
Cisco	CP-8845-K9=	IP Phone
Access Control – Card Key		
Open Options	DController	IP-Based Intelligent Door Controller (one required each site)
*Mercury	EP1501	
Open Options	NSC-100	IP-Based Network Sub-controller (all other doors)
*Mercury	MR51e	
LifeSafety Power	E5M	Access Controller/Power Enclosure
HID	900NNNNEK2037P	iClass R10 Mullion-mount reader
HID	920NNNNEK2037P	IClass R40E Single Gang Wall mount
HID	921NTNNEK00000	iClass RK40 Keypad Reader (elevator use)
RCI	0162LM	Electric Strike, Surface Mount, Latch Monitor option
HES	1006C-LBM	Electric Strike, for Cylindrical Locksets
HES	2005M3 SMART	Pac III for HES 1006C
Precision	1625	Latch Guard
GE/Interlogix	RCR-REX-W	Request to Exit
AED		
Phillips Heartstart FRx	861304	Automated external defibrillator

Emergency Notification System

Open Options	SSP-D2	IP-Based Intelligent Door Controller (one required if more than one strobe per data closet)
*Mercury	EP1502	
Open Options	NSC-100	IP-Based Network Sub-controller (Used for one strobe and Duress)
*Mercury	MR51e	
Amseco	HUSD-15BL	Duress Panic Button – activates system
Safety Technology Intl	STI-EM08073.5	Enclosure for MR51E
Altronix	Trove1M1	Enclosure for EP1502

Intrusion

Bosch	B8512-G	Panel w/transformer, D8103 Enclosure, lock & key
Bosch	B208	8 Input module for SDI2 bus
Bosch	B426	Conettix IP Ethernet Interface
Bosch	D8103	Universal Enclosure
Bosch	D101	Lock & key set
Bosch	B920	Alpha numeric keypad
Honeywell	985	Overhead Door Contacts
GE/Interlogix	1076D-G	Steel Door Contact
Hoffman	A12N126	NEMA 1 Hinged cover enclosure, 12”x12”x6”
Bosch	DS778	Motion detector – 200’ x 15’ Long Range
Bosch	DS9360	Motion detector – 360 degrees
Bosch	DS970	Motion detector
Ademco	Wave2	Siren

DPS Security Vendors List

See Section 28 01 00.