Safety and Security Guidelines for Facility Design – Littleton Public Schools

Revised October 24, 2022

I. INTRODUCTION

Purpose

The Safety and Security Guidelines for Facility Design are standards used by design professionals to prevent and minimize threats to a facility and its occupants. They identify planning exercises, design strategies, spatial relationships, and other design or programming elements that impact safety, security, and mental well-being. When properly aligned with the District's mission, the Guidelines enhance educational and community outcomes by creating clear standards that are in line with desired outcomes.

Intended Use

The Guidelines are for use in the design of school renovations and new construction projects. They describe the essential components of school safety and security and explain how the school campus will support the academic programs and vision of the school's leadership.

The Guidelines are primarily intended for use by architects and project planners. However, they also serve as an important tool for communicating the District standards to all project stakeholders, including:
- Students, parents, and families
- Faculty and administrators
- Civic leaders and community members
- First responders and law enforcement
- Project design and construction partners

The design team should facilitate participatory design, which will allow all relevant voices the chance to contribute. Include principals, teachers, and key community stakeholders as needed.

These Guidelines provide the framework for safety and security measures, while leaving architects ample flexibility for creativity and design options. In this way, the Guidelines define expectations among project stakeholders, but do not limit ingenuity. They are a living document that will continue to develop and evolve as safety and security needs change.

Expectations

Building design is one component of a holistic approach to school safety and security, which also must include legislation, policy, education, awareness, and technology. It is not possible to secure a school 100 percent, and these guidelines attempt to balance multiple considerations. The Architect is responsible to design a facility that supports positive engagement and interactions among students, faculty, staff and administration.

PK-12 children may face a number of threats during their schooling, from rare and catastrophic active shooter incidents to more common instances of bullying, harassment or sexual violence. These Guidelines include active shooter determent strategies, but also address day-to-day concerns facing students and staff.

Littleton Public Schools Board of Education Strategic Plan
These Guidelines are intended to support the District's Strategic Plan. The Plan was last updated in November 2014 to better reflect the Board's and the community's values for education. The most significant change to the Strategic Plan was the addition of Focus Area 10, which centers on the community's value around the importance of mental health for the students and their families.

Vision Statement:
Littleton Public Schools: Extraordinary learning, exceptional community, expanded opportunity and success for all students

Mission Statement:
The Littleton Public School District shall strive to educate all students for the future by challenging every individual to continuously learn, achieve, and act with purpose and compassion in a safe and secure environment.

Core Beliefs and Focus Areas:

Core Beliefs

1. A Littleton Public Schools education prepares all students to succeed in a global society.
2. Every student is unique and has different abilities, needs, and learning styles that require varying educational techniques and strategies.
3. Students learn best when their passions and talents are coupled with high expectations and academic rigor in a safe and caring environment.
4. A quality educational environment requires exceptional teachers, administrators, and staff supported by effective professional development, competitive compensation, and personnel practices that attract and retain the best staff.
5. The foundation for education and citizenship is built upon communication and connections with the community, including the active participation of students, staff, and parents.
6. A comprehensive education provides students with varied learning opportunities that include curricular and extra-curricular offerings.
7. Meaningful and appropriate evaluation of student learning occurs through timely and ongoing analysis of student performance on a variety of assessments.
8. Effective use of technology as an instructional tool enables students to successfully communicate, learn, and compete in a global environment.
9. An LPS education enables students to think critically, work collaboratively, communicate effectively, and act with integrity.
10. Students learn best when there are collaborative partnerships that foster thoughtful and relevant learning innovations between school and district leadership.
11. A strong, flexible, and fiscally responsible school district that is adequately funded is critical for long-term success and community confidence; for maintaining strong partnerships with local, state, and national elected officials and neighboring agencies; and for engaging in, shaping, and influencing public policy that affects education services in LPS.

Focus Areas

1. Enhance instructional systems and career pathways that maximize achievement for all students and integrate knowledge and skills relevant to 21st century career choices.
2. Expand utilization of instructional technology with appropriate use for student achievement while providing the infrastructure for organizational efficiency and effectiveness.
3. Provide an educational and work environment that supports professional learning and collaborative work for all staff.
4. Promote, sustain, and create quality programs that make Littleton Public Schools the uniquely preferred choice for families inside and outside the District.
5. Engage the community and parents as active partners in the objectives, activities, and performance of the school district and its students.
6. Optimize the use of District resources and facilities to meet student learning needs while operating the District efficiently.
7. Promote and provide a safe environment that fosters caring, respect, and compassion for others.
8. Enhance and support quality early childhood and childcare programs.
9. Educate and support staff, parents, and community to address diverse student learning by providing access and opportunities for all students.
10. Partner with parents and community to expand and enhance programs that address the physical, social, and emotional well-being of students, families, and staff.

Approved 11/13/14

Legacy Statement and Guiding Principles of the 2018 Bond Program

LPS voters have provided us with the rare opportunity to create history -- an opportunity to continue our tradition of excellence that we have not had in more than 30 years. Today, we have before us the challenge of building learning environments that excite and inspire our children; that prepare them for careers and life beyond what we can imagine; that honors their differences and engages their minds for generations to come and that stand the test of time.

We will create something bigger than ourselves; something our community can be proud of; schools that are beautiful, thoughtful, and relevant today as well as for future generations whose world we cannot begin to know.

What we build today will be our legacy. It must be worthy of that challenge.

II. IMPORTANT CONCEPTS / DEFINITIONS

Crime Prevention Through Environmental Design (CPTED) [1]**:** Proper design and effective use of the built environment can lead to a reduction in the fear of crime and the incidence of crime, and to an improvement in the quality of life. In contrast to the approach of addressing crime concerns by implementing visually affronting security or target-hardening measures such as locks, hard barriers, security gates, security patrols, etc., CPTED promotes high quality and visually pleasing solutions as first responses that aim to enhance the legitimate use of space. CPTED can be applied without interfering with the normal use of the space. It is easy to apply and can be economical to implement, especially if it is done early at the planning and design stages of a project.

THE FOUR PRINCIPLES OF CPTED ARE:

- Natural Surveillance: use of sight lines, windows, and permeable barriers (i.e., fencing) to facilitate passive monitoring of spaces.
- Natural Access Control: use of barriers and entry/exit points to restrict who is allowed in and out of the designated space.
- Territorial Reinforcement: visual delineation of spaces serving different purposes and functions such as the use of landscaping elements (i.e., plants and shrubs) to mark perimeters or the use of signage to establish expectations for the space.
- Maintenance and Management: mitigate disorderly and deteriorating spaces that are associated with neglect and delinquency

Layered Security [2]**:** A layered approach addressing a broad range of threats, as each successive layer provides specific components to deter, detect or delay adversarial behaviors in the event that other layers are bypassed or breached. Layers of Protection include:


[2]
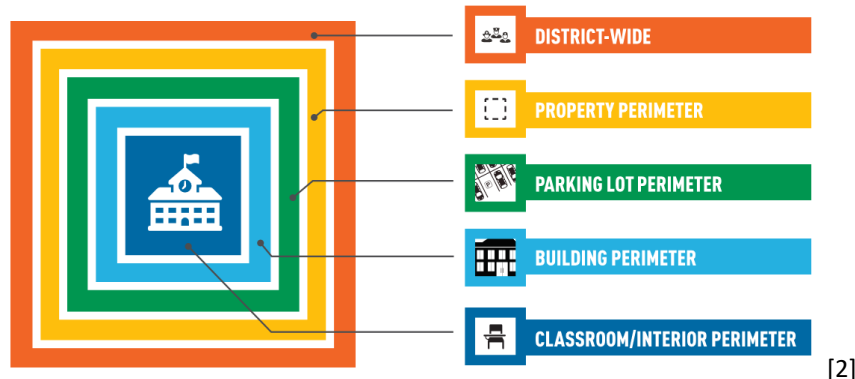
- Building design must allow free circulation between layers during normal operation.
- Each layer includes basic protective elements, or components, of security. Every layer does not necessarily include all seven of these common components, and a layer may include additional components unique to that layer. Safety and security components include:
    - Policies and Procedures
    - People (Roles and Training)
    - Architectural
    - Communication
    - Access Control
    - Video Surveillance
    - Detection and Alarms

These Guidelines are mostly concerned with the Architectural component and how it supports Communication, Access Control, Video Surveillance, and Detection and Alarms.

Standard Response Protocol [4]: The District uses Standard Response Protocol which creates common and consistent language among educators, communities, and first responding agencies. Depending on the circumstances, a protocol may be implemented without any school functions being disrupted, while others may necessitate changes in dismissal times and might involve local emergency services.

- HOLD is initiated when there is a safety concern in the hallways of the building. A hold is used when it is necessary to restrict movement within the school or building. Examples that may prompt a Hold being called include a medical emergency or a physical altercation occurring in the hallway.
- SECURE is initiated when there is a threat outside the building. A Secure is often implemented due to emergency situations that take place in the neighborhood close to the schools. Examples that may prompt a Secure being called include a bank robbery near a school, police activity, or a dangerous animal in the area.
- LOCKDOWN: is used when there is an active treat or dangerous incident on campus. Students and staff must find immediate shelter inside the nearest classroom as quickly as possible. Lock the door and turn off the lights. Stay out of the line of sight and gather in a space so someone in the hallway cannot see anyone in the room. Huddle behind large items for extra protection and consider barricading the doorway if it can be done quickly. Be very quiet. Be prepared to move quickly. Do not open the door for anyone; stay in place until law enforcement comes to your classroom and leads you to safety.
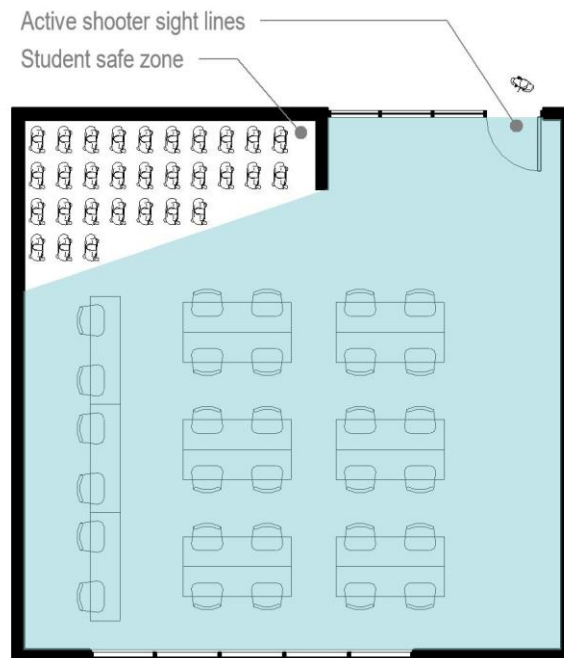
Lockdown diagram

- EVACUATE is used to get students and staff out of the building by a route designed to avoid contact with a potential threat, such as a suspicious package, a threatening person in a specific confined area, a bomb threat, or a hazardous material spill. An Evacuation protects students and staff from a threat when the exact location in the building is known.
- SHELTER is used for severe weather or hazardous material incidents. A Shelter directive is used to relocate students to a safe area away from a potential weather or hazmat-related danger.

III. Stakeholder Communication

The Design Team shall:

1. Meet with LPS Security team at major milestones as part of the owner review meetings to discuss compliance with the Guidelines.
   a. The Architect must document any deviations to the guidelines in their project. This could include actual deviations from the guidelines or items that could be interpreted differently due to existing conditions or special circumstances. These items must be approved in writing by LPS and saved in the record files.
2. Support LPS's efforts to communicate approach with all stakeholders.
3. Engage the Authority Holding Jurisdiction and first responders during the design process to encourage their input and collaboration while developing site and building specific safety strategies. Provide meeting minutes for record.
4. Provide a narrative within the Schematic Design submission, and drawings/ specifications within the Design Development and Construction Document submissions of how the design implements the Layers of Protection approach and adheres to the LPS Construction Standards for Division 08 Openings, Division 27 Communication, and Division 28 Electronic Safety and Security including:
   a. Door Hardware
   b. Video Surveillance
   c. Access control
   d. Mass Notification
   e. Intrusion Detection

   Architect to also provide a simplified enlarged vestibule plan diagram showing glazing security levels, security features (Aiphone, access control, and doors functioning in lockdown), and provide narrative for any anomalies that are not directly covered in the guidelines (such as existing conditions).
5. During the Closeout Phase, provide overall floor plans, roof plan, fire/ HVAC/ security system plans, a five-block radius site aerial image, and other information useful to police, fire, and other emergency partners.
   a. Include plans which include basic room name/ numbers, exterior door first responder numbers, and identification of security cameras and other access control points.
   b. Conduct an O&M hand off meeting with Building Administrators and District Security to educate them about security measures and systems in place. Verify that they have updated their security operations procedures.
   c. Documents must be submitted to the LPS Security and Emergency Planning Department and shall not be publicly available.
6. Graphical User Interface (GUI) Maps are used by the District to locate and monitor security system components, which includes cameras, intrusion detection, access control, and lockdown arm/disarm. The Security Contractor shall create new or update existing GUI maps with all new and revised devises. Icons shall be selectable to provide control of entry and response to alarms. Coordinate with LPS for additional requirements.

IV. Design Principles

The following are requirements and best practices for site and building design. [1] [2] [3] [5] [6] [7].

Site Guidelines (Property perimeter and Parking lot perimeter)

1. Secure Property Perimeter
   a. Delineate the property perimeter from adjacent properties by creating symbolic or physical barriers in an attractive appearance.
      i. Boundaries may include fencing, landforms, boulders, plantings, etc.
      ii. Consider perimeter fencing in areas that can't be visually monitored.
      iii. Provide 6' high minimum PVC coated chain link fence at site perimeter and detention basins unless otherwise approved by the Director of Security. This fencing type allows for transparency, natural surveillance and the ability to climb and evade if necessary. Avoid wood fences since they create hiding spots, especially between properties.
   b. Consider securable gates at secondary entries for vehicles and/or pedestrians.
   c. Provide secure fencing, or physical barrier, at all formal athletic fields and tracks.
   d. Provide sight lines or fencing at stormwater basins, playgrounds, outdoor teaching areas and outdoor dining areas as approved by the Director of Security.
   e. Consider site access needs of community use before and after school hours.

2. Site Signage
   a. Provide clear signage directing visitors to designated entrance(s).
   b. Locate signs posting rules at key points around the site.

3. Parking Lots
   a. Design site and parking lots per CPTED principles to enhance natural surveillance.
   b. Promote visibility from front desk to parking/site access/bus loop (i.e., grading, low plantings).
   c. Reflect conversation with AHJ to accommodate emergency egress, staging, and ingress.

4. Building Access
   a. Provide safe, direct, and separate paths of pedestrian and vehicular access for students, parents, staff, visitors, and deliveries.
   b. Consider aesthetic of materials, signage, and lighting.
   c. Provide barriers to prevent vehicular intrusion at unauthorized areas of property.
      i. Useful or natural elements such as heavy anchored benches or boulders, etc., are preferred over bollards.
   d. Locate pedestrian amenities such as benches and trash receptacles along key pedestrian pathways.
   e. Locate bike racks to be easily monitored.
   f. Locate visitor parking adjacent to the main entry of the administrative offices.
   g. Consider occupants' emergency access back into the building from outdoor areas.

5. Secondary Access Points
   a. Design site to limit access to sheltered areas of building. Consider the following:
      i. Grading/elevation (i.e., berm).
      ii. Strategic location of plantings.
      iii. Prevent easy physical access to walls/openings and roof.
      iv. Provide intrusion detection system (IDS) for roof hatches and low roof access points.

6. Play Areas
   a. Locate play areas away from major site and building access points.
   b. Arrange play areas so staff can supervise.
      i. Include low landscaping and visual access both from within the building and when standing near the play area (full range of view).

7. Landscaping
    a. Eliminate hiding places caused by landscaping or fencing.
    b. Enhance the grounds with landscaping, student artwork, monuments, and/or other physical means to encourage people to occupy the space and build pride and ownership.
    c. Use landscaping to visually screen undesirable objects that detract from a welcoming entry experience.

8. Site Lighting
    a. Provide adequate, even footcandle coverage, per local zoning code and industry standards.
    b. At a minimum, provide lighting at main entry, parking lot(s), building perimeter.
    c. Consider landscaping and future tree growth when designing site lighting.
    d. Coordinate lighting to support exterior camera coverage.

9. Exterior Cameras
    a. Confirm camera model specifications and locations with LPS Security Team and District Technical Specifications and Standards. Provide camera coverage for the following areas at a minimum:
        i. Entry approach
        ii. Playgrounds
        iii. Parking lot
        iv. Outdoor learning
        v. Athletic fields
    b. Coordinate with site lighting or provide cameras adapted to low lighting levels in areas that do not have site lighting.
    c. Consider landscaping and future tree growth when locating cameras to ensure the view is not distorted.

10. Other
    a. Access to dumpsters and site utilities to be secure. Provide a lock and/or cover to limit access.
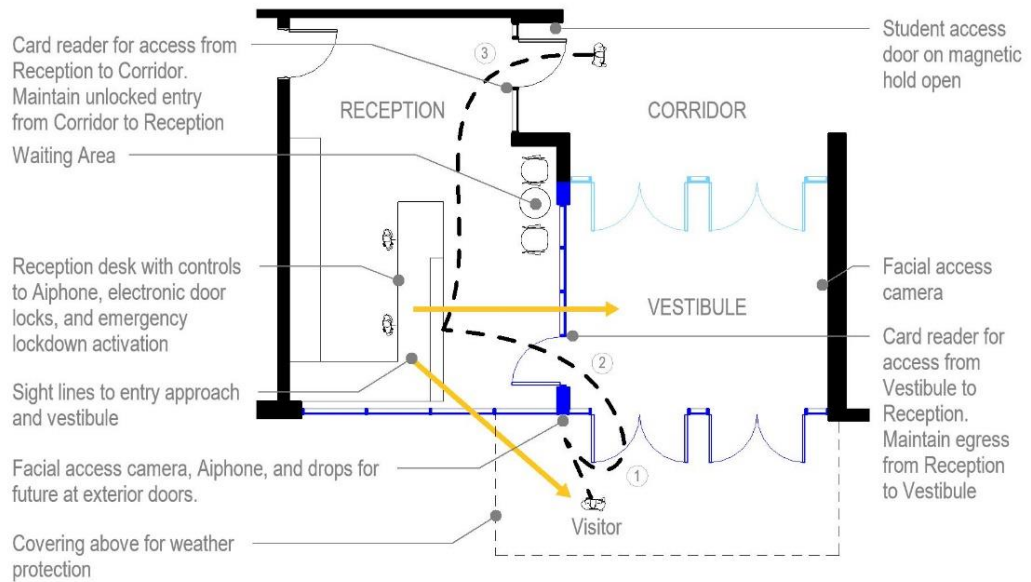
Building Perimeter Guidelines
The exterior envelope provides the first level of protection, physical and visual, as well as views, natural daylight, connection to the community, and natural surveillance.

1. General
    a. Apply CPTED principles for natural access control and surveillance.
    b. Consider door, window, and building-mounted security devices, such as cameras and intercoms, that are attractive and unimposing.
    c. Upon building envelope completion, the General Contractor must contact authorities having jurisdiction to conduct a survey and determine if Public Safety and/ or Consumer Bi-Directional Amplifiers (BDA) are required.
        i. The evolution of new composite construction materials and wireless networks can interfere with the effective radio coverage for first responders.
        ii. Two-way radio signal boosters may be required in new construction/renovation for compliance with the emergency responder radio coverage. More information on code requirements can be found in IFC-510 or NFPA-72, Chapter 24.
        iii. BDAs are typically acceptable for buildings under 10 floors and 500,000 square feet. [7]
        iv. General Contractors should provide a line item allowance for this cost in their Guaranteed Maximum Pricing (GMP).
    d. Design public address system to have a one-way communication system reaching student-occupied areas immediately outside the building.

2. Exterior Doors and Glazing
    a. Categorize exterior openings as Primary, Secondary, or Tertiary.
        i. Primary: main and event entrances with controlled and monitored building access.
        ii. Secondary: primarily for emergency egress but may be used for limited building access by faculty or access to/from playgrounds/ outdoor learning areas.

   iii. Tertiary: emergency egress only.
  b. Analyze exterior threats with District Security and develop a security glazing strategy for primary, secondary and tertiary openings. Reinforced glass deters or delays the ability of an attacker to breach a doorway using a firearm or other tool/weapon, in addition to limiting injuries from glass shards resulting from a blast, fire, accident, natural disaster or severe weather event. The three levels of reinforcement typically used in schools, from least to most secure are as follows:
   i. Security film is applied to the interior surface of a glazing unit and it keeps glass in place upon repeated impact (approximately 2 minutes) but does not prevent bullet penetration. Specify a film at least 8 millimeters thick paired with impact protection adhesive. Security Film is not allowed in new construction/ major renovation projects. Coordinate with a General Contractor early in design as the product cost may be 1.5 times the cost of traditional glazing and have a 3-4 week lead time. *
   ii. Security Laminated glazing fits in standard storefront frames and is reinforced with a plastic vinyl interlayer. This layer allows the glass to stay in place upon repeated impact (approximately 12 minutes) but does not prevent bullet penetration. Coordinate with a General Contractor early in design as the product cost may be 2 times the cost of traditional glazing and have an 8-12 week lead time. *
   iii. Bullet Resistant or Ballistic glazing that is rated to UL 752 Level 3 is industry standard for Schools. It stays in place upon repeated impact and does not allow Level 3 bullet penetration. Glazing must be paired with a bullet resistant frame and the system can weigh 8 lbs/sqft. Architect to note that Level 3 frame finish and glazing tint options may be limited and should be considered early in design. Coordinate with a General Contractor early in design as the product cost may be 4 times the cost of traditional glazing and have a 10-14 week lead time. *
    1. Confirm the weight of doors and note that heavy duty hinges and an ADA operator are likely required to meet standards for maximum door opening force.
    2. Coordinate for intrusion detection components to be prepped during manufacturing as they are difficult to install in bullet resistant doors and frames during construction.
   iv. *All lead times subject to change based on current market conditions. Times listed may be used for comparison.
  c. Mark all exterior doors (including exterior garage/ coiling doors) with first responder numbering system
   i. Coordinate numbering with District Security, local police and fire officials.
   ii. Typically begin numbering at the main entrance and proceed around the perimeter clockwise.
   iii. Numbers should be made of reflective material.
  d. Building exterior numbers to be 6" high white lettering on 10" x 8" District blue placard. Building interior numbers are to be 3" high white lettering on a 5" x 4" District blue placard. Stickers are not permitted. If entrances have electronic access control, place key locks as a backup.
   i. For keying, all exterior entrances should be on a separate master key from interior entrances.
   ii. A video intercom should always be used when there is no direct line of sight to the person that is screening incoming visitors. When possible, network and integrate with electronic access control system.
  e. Provide Knox Boxes to hold a master key or credential accessible only to fire departments, emergency medical services, and law enforcement to allow rapid access to locked doors in emergency situations. The District standard at the time of publication is the KnoxVault 4400, recessed for new construction.

i.   For elementary schools, provide a minimum one Knox Box for fire and one Knox Box for law enforcement at the Main Entrance.
                    ii. For secondary schools, provide a minimum of two Knox Boxes for fire and two Knox Boxes for law enforcement. Provide 1 set of Knox Boxes at the Main Entry and coordinate second location with District Security.
          f.   Consider reflectivity of glazing on exterior windows to prevent visual access from the outside to the inside.
                    i.   For renovations, consider one-way film.
                    ii. For new construction, consider specifying an integrated one-way or highly reflective glazing unit.
                    iii. Confirm that highly reflective glazing does not send an unwelcoming message to the School and Community Stakeholders nor adversely affect building daylighting and glare control.
          g.   Provide window coverings at all exterior windows with visuals to occupied spaces.
    3.   Main Entry:

          a.   Typical at all Main Entries:
                    i.   Provide sight lines from reception to vestibule, and ideally the front doors and building approach.
                    iii. Provide Aiphone system outside building and/or within vestibule to request entry into administration office.
                    iv. Provide vestibule or secured lobby sized to be a welcoming area for visitors as well as for students.
                    v.   Create an entry that is well marked, lit, and attractive.
                    vi. Locate electronic door lock and emergency lockdown activation controls at reception desk and one other location in the administration suite.
                    vii. For new construction and major renovations, specify construction of walls, doors, and glazing between Vestibule and Reception to meet or exceed UL 752 Level 3 standard for ballistic protection. Reinforce drywall partitions with ballistic fiberglass panels, installed with 4" backing strips at butt joints. This applies to components below door-head height.

b. Option 1 Entry Sequence (standard at Pre-K and Elementary School): Visitors circulate through the weather vestibule and then enter the administration office/ reception.

Card reader for access from Reception to Corridor. Maintain unlocked entry from Corridor to Reception

Waiting Area

RECEPTION

CORRIDOR

Student access door on magnetic hold open

Reception desk with controls to Aiphone, electronic door locks, and emergency lockdown activation

Sight lines to entry approach and vestibule

Facial access camera, Aiphone, and drops for future at exterior doors.

Covering above for weather protection

VESTIBULE

Visitor

Facial access camera

Card reader for access from Vestibule to Reception. Maintain egress from Reception to Vestibule

*During normal business hours, all doors shown require card access and/or remote electronic latch release, except student access door.

Standard construction
New Build: Security Laminated Glazing
Renovation: Security Laminated Glazing or Security Film on existing glazing
New Build: UL 752 Level 3 Bullet resistant construction
Renovation: UL 752 Level 3 Bullet resistant construction required in front of stationed personelle
            Security Laminated Glazing or Security Film on existing glazing allowed elsewhere

c. Option 2 Entry Sequence (standard at Middle and High School): Visitors circulate through a weather vestibule to a secure lobby with transaction counter to the administration office/ reception.
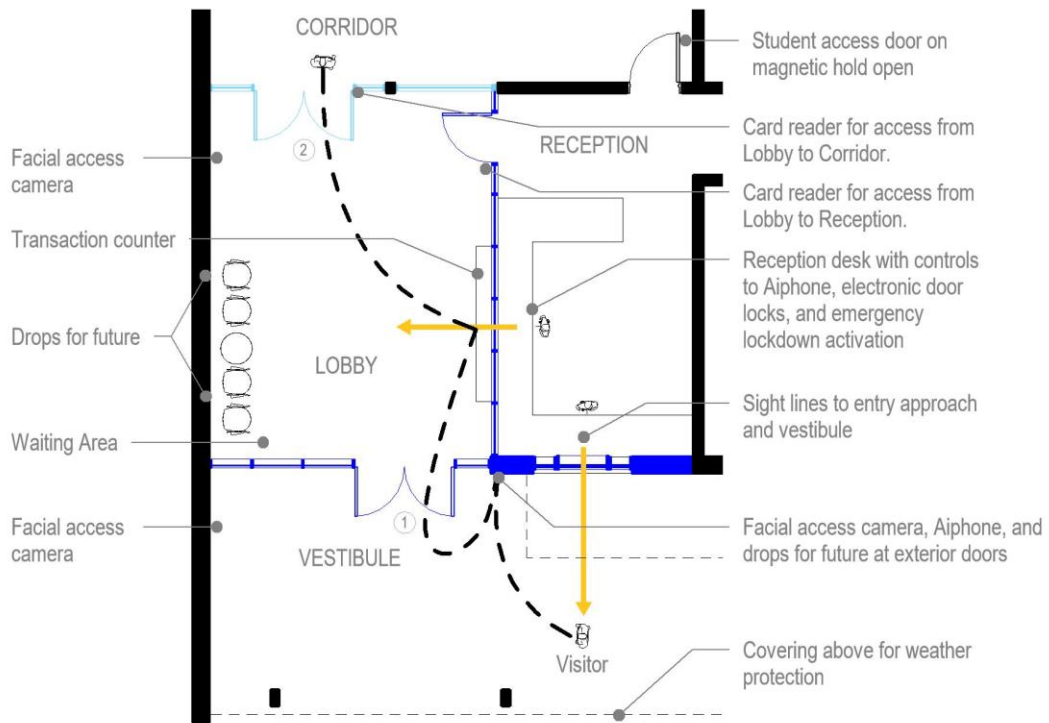
*During normal business hours, all doors shown require card access and/or remote electronic latch release, except student access door

Standard construction
New Build: Security Laminated Glazing
Renovation: Security Laminated Glazing or Security Film on existing glazing
New Build: UL 752 Level 3 Bullet resistant construction
Renovation: UL 752 Level 3 Bullet resistant construction required in front of stationed personelle
Security Laminated Glazing or Security Film on existing glazing allowed elsewhere

Building Guidelines – Interior Space Planning

1. Compartmentalize Building
   a. Stairwell and cross-corridor doors should be configured to allow for confining an emergency event to a limited area of the building.
   b. These doors should normally be held open with electromagnetic devices that resist tampering and release upon remote activation.
   c. Cross-corridor doors should be equipped with exit-only panic hardware and either a cylinder lock to manually gain access with a key or integration with an electronic access control system to electronically gain access.
2. Guided Circulation
   a. Design corridors to be easily observed and supervised.
   b. Provide wayfinding and room signage that is clear and easily visible.
   c. Create interior corridors that are attractive and uplifting.
3. Lockers
   a. Locate lockers along common paths of travel and eliminate hiding places.
   b. Where lockers are grouped in an open area, consider limiting locker heights to promote visibility.

4. Common Spaces
    a. Partially or fully open common areas shall have multiple well-distributed, points of egress. Consider exceeding the number required by egress calculations.
    b. Provide areas of possible refuge within the space or accessible nearby.
5. Health and Wellness
    a. Prioritize space for student support and mental health services.
    b. Consider locating the counseling suite in a high traffic area, perhaps near Commons.
    c. Create inviting spaces to encourage student participation and reduce mental health stigmas.
    d. Consider creating locations for positive imagery and messages that can be curated by the school staff, students, or community.

Building Guidelines – Room Design and Details
1. Visibility
    a. All student occupied rooms must have visibility into/from corridor. At a minimum, provide a ¼ lite door with an opaque slider to cover the lite.
    b. Classrooms must also have 'lockdown' areas to fit the entire class load.
        i. Provide 1.0 SF per Elementary student, 1.5 SF per Middle School student, and 2.0 SF per High School student/ Teacher. If possible, err on the side of slightly larger capacity than is required.
        ii. Consider layouts that are not dependent upon window coverings.
        iii. If using garage style doors, provide frosted glazing. Tie doors to lockdown system and include a door bottom sensing edge.
        iv. Indicate shelter in place zone with floor pattern or markings.
    c. Provide sight lines to breakout areas inside and/or outside the classroom.
    d. Promote visibility in common/circulation areas.

2. Exiting
    a. Consider providing multiple points of egress from classrooms only if sheltering in place is not possible and if the additional exits do not negatively impact the use of the classroom.
3. Door Locks
    a. Consider wireless access control locks, with wireless fob to lock door. Tie into mass notification/lockdown system.
    b. Consider wireless solutions to integrate with existing District infrastructure in renovations where a wired solution is not feasible. These products will lock a closed door when the lockdown system is initiated.
    c. Locks should have visual indicator, so status (locked or unlocked) is visible from interior.
4. Door Frame Signage
    a. Provide signage on both sides of the door frame header at all rooms. Header signage is not required at Vestibule or cross-corridor doors. Reference District Technical Specifications and Standards, Division 10 for additional details.

Building Systems
While the Architects' focus is building layout and design, they are to coordinate the incorporation of Communications, Access Control, Video Surveillance, Detection and Alarms with sub-consultants and District personnel. Reference District Technical Specifications and Standards.

V. References and Sources

[1] T. D. Crowe and L. J. Fennelly, Crime Prevention through Environmental Design, 3rd ed., Waltham: Butterworth-Heinemann, 2013.

[2] Partner Alliance for Safer Schools, Safety and Security Guidelines for K-12 Schools, 4th ed., Partner Alliance for Safer Schools, 2018.

[3] G. Grace, "What Works in Active Threat Incidents: Best Practices for the K-12 Environment," 14 March 2019. [Online]. Available: https://passk12.org/news/what-works-in-active-threat-incidents-best-practices-for-the-k-12-environment/. [Accessed 20 September 2019].

[4] I Love U Guys Foundation, The Standard Response Protocol - K12, 2020.

[5] National Fire Protection Association, "NFPA 3000 (PS): Standard for an Active Shooter / Hostile Event Response (ASHER) Program," 2018.

[6] Centers for Disease Control and Prevention, "Crime Prevention Through Environmental Design (CPTED) School Assessment (CSA)," Center for Disease Control and Prevention, and Carter & Carter Associates, Atlanta, 2017.

[7] "Bi-Directional Amplifiers BDA Vs DAS Distributed Antenna Systems," SignalBooster.com, 18 September 2017. [Online]. Available: https://www.signalbooster.com/blogs/news/bi-directional-amplifiers-bda-vs-das-distributed-antenna-systems. [Accessed 8 July 2020].

The recommendations listed here are made for the purpose of providing for a safer environment, acknowledging that it is not possible to secure a school 100 percent. It is up to the design team for each specific project to determine whether and how to incorporate these generic recommendations into solutions appropriate for actual and specific applications and in conformance with state and local building and life safety codes.

These guidelines were prepared by Cuningham with coordination from Littleton Public Schools Safety and Security Department and Jacobs.