

2014

Appendix A

School Safety Infrastructure Standards

State of Connecticut
Department of Administrative Services
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Introduction

Pursuant to Public Act (PA) 13-3, Section 80 (b), the School Safety Infrastructure Council (SSIC) has been charged with developing school safety infrastructure standards for school building projects under chapter 173 of the general statutes. Such standards are to conform to industry standards for school building safety infrastructure and are to include, but are not limited to, standards regarding (1) entryways to school buildings and classrooms... (2) the use of cameras throughout the school building and at all entrances and exits, including the use of closed-circuit television monitoring... (3) penetration resistant vestibules, and (4) other security infrastructure improvements and devices as they become industry standards.

Section 80 (c) of PA 13-3 requires that the SSIC develop these standards by January 1, 2014, and annually thereafter submit these standards to the School Building Projects Advisory Council (SBPAC) and Section 83 further requires that the SBPAC incorporate such school safety infrastructure standards into the model blueprints for new school building projects that the SBPAC is charged with developing.

Pursuant to section 84 (b) of PA 13-3, on and after the date that the School Safety Infrastructure Council submits the school safety infrastructure standards, the decision to approve or deny an application and the determination of which expenses are eligible for reimbursement under the program shall be in accordance with the school safety infrastructure standards in effect on the date from which a complete grant application has been submitted to the Office of School Facilities (OSF) in accordance with the provisions of Chapter 173 of the Connecticut General Statutes (CGS). School Safety Infrastructure Standards apply to new and renovate as new projects.

Comprehensive Approach to School Security

Introducing safety standards as part of school design requires a holistic approach to balance many objectives, such as reducing risk, creating a welcoming learning environment that is secure, facilitating proper building function, hardening of physical structures beyond the required building code, and developing security and safety planning standards to establish protocol for security management during times of crises.

Prior to the submission of a school construction grant application, a uniform risk assessment of the site and all buildings on the site for which a school facility is to be located will be required. The uniform risk assessment will give school districts the ability to determine a threshold level of awareness and responsiveness to potential threats to all hazards on, or in close proximity to, a proposed school construction project site. The “all hazards” approach should be used as the preferred screening tool for preliminary design to allow districts the opportunity to assess its critical assets, account for its vulnerabilities to natural or manmade hazards, and to determine the most effective mitigation measure to achieve a desired level of protection. Please refer to Appendix D of the January 2014 School Safety Infrastructure Council Report for the preferred risk assessment tool for Connecticut.

Central to the security assessment process is the need to conduct an emergency response time analysis (ERTA) to determine the actual amount of time needed for a police response to a specific school in a crisis situation. This exercise will also help in appropriate design decisions related to architectural safeguards, locking technologies and locations and other measures that could deter or delay an intruder for an amount of time necessary to ensure an onsite public safety response prior to deep building penetration. An ERTA should be conducted for each proposed school design plan to better inform local planners on which school security design features may be appropriate for impeding the entry of unwanted individuals or preventing or delaying the free movement of such parties in a school facility.

Utilizing the “all hazards” approach to school safety, municipalities should work with local school districts to consider whether a school should serve the function of an emergency shelter in severe emergency conditions, such as a major storm or power outage. Schools are typically designed for large assembly occupancy with mass care functions, such as adequate toilets, showers, food service, etc. Multipurpose areas such as the gym or cafeteria have the capacity to accommodate a large number of people and can provide safe shelter from extreme conditions. If a new or renovate-as-new school facility is being constructed with the intent that the facility may serve as an emergency shelter, the design of the designated area that is to serve as an emergency shelter should be in compliance with the ICC/NSSA Standard for the Design and Construction of Storm Shelters. ICC 500 is the national standard for compliant safe room/storm shelter in new K-12 school facilities. In addition, municipalities and school districts should consider equipping schools with auxiliary power capability, either through an installed generator or at least the wiring and outlet to install a generator (i.e., “plug-in ready”).

For security infrastructure to be effective, an “all hazards” school security and safety plan must be in place prior to building occupancy to establish procedures for managing various types of emergencies. Each school employee should receive an orientation on the plan to allow school districts and municipal officials the ability to implement a unified approach to emergency planning, preparedness, and response. Pursuant to PA 13-3, Section 86, the Department of Emergency Services and Public Protection (DESPP), in consultation with the State Department of Education, has developed all hazards School Security and Safety Plan Standards together with an all hazards School Security and Safety Plan Template which is scheduled for release by January 1, 2014.

School Safety Design Committee

To design and develop a safe and secure school requires the input of community representatives and local officials during the design phase of construction. The SSIC recommends that a School Safety Design Committee be established for each school construction project, during the design phase of construction. Membership of the School Safety Design Committee should include those representatives assigned to the School Security and Safety Committee as defined in the School Safety and Security Plan Standards and may include any other person the board of education deems appropriate, including, but not limited to, the school transportation manager, school resource officer, school security manager, and local emergency management director. The project design consultant team should serve as

professional advisors to the School Safety Design Committee. The School Safety Design Committee should work with the school construction project design consultant team to review and assess the safety and security needs of a school facility and make recommendations on safety and security features consistent with the programmatic needs of the district.

Developing School Safety Infrastructure Standards

The development of these school safety infrastructure standards is based on literature review, data analysis, expert testimony gathered from public informational meetings held by the SSIC between the months of June and September 2013, identification of best practices both within and outside the State of Connecticut, and in coordination with the Federal Department of Homeland Security (DHS) Science and Technology Directorate, Resilient Systems Division in the development of the Integrated Rapid Visual Screening (IRVS) assessment tool for the design of safe schools. For more information on the specific reference material to this report, please see Addendum 1 – School Safety Infrastructure Reference Material.

At minimum, all new and renovate as new school facilities must be compliant with Connecticut state building and fire code requirements. In addition, these School Safety Infrastructure Standards recognize critical design elements to achieve the goal of more secure schools. These critical compliance areas of school safety infrastructure design, some of which were specifically identified by P.A. 13-3, reinforce building and fire code requirements and enhance safety and security features related to school infrastructure. Critical compliance areas have been determined to be the most vulnerable to security risk and have been identified as areas that a district must address to be eligible for a school construction grant.

Critical Compliance Areas subject to School Safety Infrastructure Standards include:

- 1) School Site Perimeter;
- 2) Parking Areas and Vehicular and Pedestrian Routes;
- 3) Recreational Areas (playgrounds, athletic areas, multipurpose fields);
- 4) Communication Systems;
- 5) School Building Exterior;
- 6) School Building Interior;
- 7) Roofs;
- 8) Critical Assets/Utilities; and
- 9) Other Areas.

Investments in protective design features in these particular areas offer the most cost effective use of limited resources with a corresponding and relatively high benefit in terms of improved security. As such, compliance in these areas is required for grant approval. In many instances, districts may reach compliance in one of several ways, depending on the nature of the site, the project, and the district demographics.

Protective design features should include design functions that allow for natural and electronic surveillance. Natural surveillance is the use of design, including spatial definition and

designation strategies, to increase the actual abilities of guardians to observe intruders, as well as to increase the perception of intruders that they may be observed by others. Electronic surveillance is the use of electronic devices for observation purposes, such as video surveillance or sound recording devices. Visual observation is greatly facilitated by appropriate lighting, which can help reduce crime opportunity by increasing the perceived risks relative to the chances of being observed and can also help reduce the fear of crime.

Technical Compliance Manual

School Safety Infrastructure Standards provide parameters for school safety and security. The type of risk assessed and the means and methods to mitigate risk will vary from school to school and district to district. A Technical Compliance Manual is being developed as an additional appendix to the Report of the School Safety Infrastructure Council and these School Safety Infrastructure Standards to provide districts with optional approaches on how to mitigate risk specific to their school utilizing recognized industry standards. The Technical Compliance Manual will provide options to mitigate risk within the parameters of these Standards and afford local officials the opportunity to make decisions, at the local level, regarding the specific needs of their school facility.

School Safety Infrastructure Standard Waiver

The local or regional board of education may apply to the Commissioner of Administrative Services for a waiver from any of the school safety infrastructure standards developed by the School Safety Infrastructure Council and the Commissioner of Administrative Services may grant such a waiver if the Commissioner determines that such compliance would be infeasible, unreasonable, or excessively expensive.

I. School Safety Infrastructure Standards

1. School Site Perimeter

The fundamental objective of site planning is to place school buildings, parking areas, and other necessary structures in such a way as to provide a setting that is functionally effective, as well as aesthetically pleasing. Increasing concerns for security add another dimension to the range of issues that must be considered.

1.1. Crime Prevention Through Environmental Design (CPTED) is a crime prevention strategy that uses architectural design, landscape planning, security systems, and visual surveillance to create a potentially crime free environment by influencing human behavior and should be applied when appropriate. CPTED usually involves the following principles:

1.1.1. Natural Surveillance – using physical features to preclude blind spots or hiding spots to enhance visibility and keep intruders easily observable.

1.1.2. Territorial Reinforcement – using physical barriers to express ownership over an area and to distinguish public and private areas.

1.1.3. Natural Access Control – strategic placement of points of entry/egress, fencing, landscaping and lighting to create a perception of risk to potential intruders.

1.1.4. Target Hardening – use of features that prohibit entry or accessibility.

1.2. All protective design features should include functions that allow for natural and electronic surveillance.

1.3. Fencing, landscaping, edge treatment, bollards, signage, exterior furnishings and exterior lighting may be used to establish territorial boundaries and clearly delineate areas of public, semi-public, semi-private, and private space.

Access Control

The following minimum standards shall be met:

1.4. School boundaries and property lines shall be clearly demarcated to control access to a school facility and shall clearly delineate areas of public, semi-public, semi-private, and private space.

- 1.5. Where a school is a shared use facility that serves the community, internal boundaries shall be clearly defined to establish a distinct perimeter for both the school and the shared use facilities with separate and secure access points that are clearly defined. Boundaries may be defined by installing fencing, signage, edge treatment, landscaping, and ground surface treatment.
- 1.6. Bollards shall be kept clear of ADA access ramps and the corner quadrants of streets (A bollard is a post or set of posts used to delimit an area or to exclude vehicles).
- 1.7. The number of vehicle and pedestrian access points to school property shall be kept to a minimum and shall be clearly designated as such.
- 1.8. Directional signage shall be installed at primary points of entry to control pedestrian and vehicular access and to clearly delineate vehicular and pedestrian traffic routes. Signage should be simple and have the necessary level of clarity. Signage should have reflective or lighted markings.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 1.9. Fencing, if installed, around the perimeter of the school property shall not permit footholds, where feasible, to deter unauthorized access to a school facility.
- 1.10. Fencing, if installed, shall be free of any vegetation. Remove bushes, trees, containers, or any other object that might provide a hiding place from the proximity of the fence.
- 1.11. Bollards, if installed, should not be less than thirty (30) inches in height and shall never exceed a height of forty two (42) inches to allow for an unobstructed view.
- 1.12. Do not use planters in high pedestrian traffic areas.
- 1.13. Secure manholes, utility tunnels, culverts, and similar unintended access points to the school property with locks, gates, or other appropriate devices without creating additional entrapment hazards.

Surveillance

The following minimum standards shall be met:

- 1.14. Unsupervised site entrances shall be secured during low use times for access control purposes.
- 1.15. Perimeter fencing, landscaping and signage shall not obstruct the view of natural and/or electronic surveillance.

- 1.16. Landscaping shall provide an unobstructed view for natural and/or electronic surveillance.
- 1.17. The design shall allow for the monitoring of points of entry/egress by natural and/or electronic surveillance during normal hours of operation and during special events.
- 1.18. At minimum, electronic surveillance shall be used at the primary access points to the site for both pedestrian and vehicular traffic.
- 1.19. All points of entry/egress shall be adequately illuminated to enhance visibility for purposes of surveillance.
- 1.20. Designated pedestrian and vehicular traffic routes shall be adequately illuminated to reinforce natural and or electronic surveillance during evening hours.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 1.21. Avoid blocking lines of sight with fencing, signage, and landscaping.
- 1.22. Avoid dense vegetation in close proximity to a school building, where someone could hide undetected.
- 1.23. Locate access points in areas of high visibility that can be easily observed and monitored by staff and students in the course of their normal activities. Natural surveillance may be maximized by controlling access points that clearly demarcate boundaries and spaces.
- 1.24. Video surveillance systems may be used around the site perimeter to provide views of points of entry/egress and as a means to securely monitor an area when natural surveillance is not available.
- 1.25. Surveillance equipment, where installed, shall be mounted to resist forces in any direction. Surveillance equipment should be designed to be vandal resistant and protect against natural hazards.
- 1.26. Lighting should be sufficient to illuminate potential areas of concealment, enhance observation, and to provide for the safety of individuals moving between adjacent parking areas, streets and around the school facility.
- 1.27. Video surveillance systems, where installed, shall have adequate illumination levels to produce a useable image.

2. Parking Areas and Vehicular and Pedestrian Routes

The following minimum standards shall be met:

- 2.1. Points of entry/egress shall allow for natural and/or electronic surveillance during normal hours of operation and during special events.
- 2.2. At the minimum, electronic surveillance shall be used at the primary access points to the site for both pedestrian and vehicular traffic.
- 2.3. Designated pedestrian and vehicular points of entry/egress and traffic routes shall be adequately illuminated to reinforce natural and or electronic surveillance.
- 2.4. Signage shall be posted at all vehicular access points with rules as to who is allowed to use parking facilities and when they are allowed to do so. Signage should be simple and have the necessary level of clarity. Signage should have reflective or lighted markings.
- 2.5. Unmanned points of entry that are otherwise secured shall be made accessible for emergency vehicles.
- 2.6. Parking areas shall be adequately illuminated with vandal resistant lighting.
- 2.7. Parking shall be prohibited under or within the school building.
- 2.8. Adequate lighting shall be provided at site entry locations, roadways, parking lots, and walkways from parking to buildings.
- 2.9. Fire lanes around the building shall be closed off from traffic with "break-away" bollards.
- 2.10. Landscaping shall be designed to provide an unobstructed view for natural and/or electronic surveillance.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 2.11. External access to school facilities shall be kept to a limited number of controlled entrances. Vehicular circulation routes shall be separated and kept to a minimum of two routes per project site for purposes of separating service and delivery areas from visitors' entry, bus drop-off, student parking and staff parking. Circulation routes shall be separated, clearly demarcated, and easily supervised. .

- 2.12. Where distance from the building to the nearest curb provides a setback of less than twenty (20) feet, parking shall be restricted in the curb lane.
- 2.13. A drop-off/pick-up lane shall be designated for buses only with a dedicated loading and unloading zone designed to adequately allow for natural and/or electronic surveillance and to avoid overcrowding and accidents.
- 2.14. Pedestrian routes from drop off areas shall be a minimum width of five (5) feet to accommodate pedestrian traffic during peak periods of use.
- 2.15. Separate shipping and receiving areas from all utility rooms by a minimum of fifty (50) feet, unless prohibited by site constraints. If a site is determined to be physically constrained from reasonably meeting the fifty (50) foot separation requirement, the district shall maximize the separation distance to the greatest extent possible. Measure the utility designation boundary from the outer most perimeters of the shipping and receiving area to the outer most perimeter of the utility room. Utility rooms and service areas include electrical, telephone, data, fire alarm, fire suppression, and mechanical rooms.
- 2.16. Design entry roads so that vehicles do not have a straight-line approach to the main building. Use speed-calming features to keep vehicles from gaining enough speed to penetrate barriers. Speed-calming features may include, but are not limited to, speed bumps, safety islands, differing pavement surfaces, landscape buffers, exterior furnishings and light fixtures.
- 2.17. Secure unsupervised site entrances during low use times for access control.
- 2.18. Sign text should prevent confusion over site circulation, parking, and entrance location. Unless otherwise required, signs should not identify sensitive or high risk areas. However, signs should be erected to indicate areas of restricted admittance.
- 2.19. Parking areas should be designed in locations that promote natural surveillance. Parking should be located within view of the occupied building, while maintaining the maximum stand-off distance possible.
- 2.20. Locate visitor parking in areas that provide the fewest security risks to school personnel. The distance at which a potentially threatening vehicle can park in relation to school grounds and buildings should be controlled.
- 2.21. Keep the number of driveways or parking lots that students will have to cross to get into the school building to a minimum.

- 2.22. Consider illuminating areas where recreational activities and other nontraditional uses of the building occur. If video surveillance systems are installed, adequate illumination shall be designed to accommodate it.
- 2.23. Consider blue light emergency phones with a duress alarm in all parking areas. If utilized, blue light emergency phones shall be clearly visible, readily accessible and adequately illuminated to accommodate electronic surveillance.

3. Recreational Areas – Playgrounds, Athletic Areas, Multipurpose Fields.

The following minimum standards shall be met:

- 3.1. The design shall allow for ground level, unobstructed views, for natural and/or electronic surveillance of all outdoor athletic areas, playgrounds and recreation areas at all times.
- 3.2. Playground equipment shall be compliant with life safety, building, ADA and other federal, state and local building code requirements. Prior to installing playground equipment refer to the local authority having jurisdiction for compliance with state building code.
- 3.3. Pre-kindergarten and kindergarten play areas shall be separated from play areas designed for other students.
- 3.4. Athletic areas and multipurpose fields at elementary school buildings shall contain a physical protective barrier to control access and protect the area.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 3.5. Playgrounds and other student gathering areas shall be located away from public vehicle access areas, such as streets or parking lots by a minimum of fifty (50) feet unless prohibited by site constraints. If a site is determined to be physically constrained from reasonably meeting the fifty (50) foot separation requirement, maximize the separation distance between the vehicle access area and student gathering area to the greatest extent possible. Measure the student gathering boundary area from the outer most perimeter of the playground or other public gathering area and the outer most perimeter of the public vehicle access area or parking lot.
- 3.6. Consider a physical protective barrier around athletic areas and multipurpose fields at secondary school buildings to control access and protect the area.

- 3.7. Locate access points to recreational areas in areas of high visibility that can be easily observed and monitored by staff and students in the course of their normal activities. Natural surveillance may be maximized by controlling access points that clearly demarcate boundaries and spaces.
- 3.8. Installing fences internal to the site perimeter around pre-kindergarten and kindergarten play areas may maximize security. If fencing is installed around a pre-kindergarten and kindergarten play area, it shall be a minimum of four (4) feet in height and have a minimum clearance of six (6) feet horizontally in all directions from the play equipment. Emergency /Pedestrian access gate(s) with approved egress hardware shall be installed in fencing enclosing pre-k and kindergarten play areas.

4. Communication Systems

The following minimum standards shall be met:

- 4.1. All classrooms shall have two way communications with the administrative office.
- 4.2. All communication systems shall be installed in compliance with Connecticut state building and fire code requirements.
- 4.3. Emergency Communication Systems (ECS) and/or alarm systems shall have redundant means to notify first responders, supporting agencies, public safety officials and others of an event to allow for effective response and incident management. Alarm systems must be compatible with the municipal systems in place. These systems may include radio, electronic, wireless or multimedia technology which provides real time information (such as audio, visual, mapping and relevant data) directly to first responders.
- 4.4. Emergency Communication Systems (ECS) shall be installed and maintained in accordance with NFPA 72, 2010, or the most current fire code standard adopted by the State of Connecticut. ECS may include but is not limited to public address (PA) systems, intercoms, loudspeakers, sirens, strobes, SMS text alert systems, and other emerging interoperable resource sharing communication platforms.
- 4.5. All new buildings shall have approved radio coverage for first responders within the building based upon the existing coverage levels of communication systems at the exterior of the building. The system as installed must comply with all applicable sections of the Federal Communication Commission (FCC) Rules for Communication Systems and shall coordinate with the downlink and uplink pass band frequencies of the respective first responders.

- 4.6. All in-building radio systems shall be compatible with systems used by local first responders at the time of installation.
- 4.7. Discrete alarm systems wiring shall not be concentrated, nor mounted in a shared pathway.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 4.8. Consider operational procedures in coordination with security standards that include emergency notifications for immediate threat and the testing of emergency response procedures.
- 4.9. Consider a communication strategy in coordination with security standards that include the distribution of a radio or wireless communication system to appropriate personnel, with necessary equipment, for utilization in case of emergency.
- 4.10. If radio communication systems are used, radios shall be capable of operating on frequencies reserved by the Federal Communications Commission (FCC) for school districts.
- 4.11. Provide radio system and signal booster supervisory signals for equipment malfunction and signal booster failure. Power supply supervisory signals should include loss of normal AC power, failure of battery charger, and low battery capacity (alarming at 70 percent of battery capacity).
- 4.12. Call buttons with direct intercom communication to the central administrative office and/or security office should be installed at key public contact areas.

5. School Building Exterior – Points of Entry/Egress and Accessibility

School Building Exterior

The following minimum standards shall be met:

- 5.1. Points of entry/egress shall be designed to allow for monitoring by natural and/or electronic surveillance during normal hours of operation and during special events.
- 5.2. At minimum electronic surveillance shall be used at the primary points of entry.
- 5.3. Identification signage shall be placed at all public points of entry/egress to the school. Signage should be simple and have the necessary level of clarity. Signage shall have a good color contrast.

- 5.4. Lighting shall be sufficient to adequately illuminate potential areas of concealment, enhance natural and/or electronic surveillance, and discourage vandalism.
- 5.5. Emergency egress lighting, as required by Connecticut state building and fire code, shall be available for safe evacuation and to reduce the risk of panic related injuries.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 5.6. Trees shall be a minimum of ten (10) feet from the building to prevent window or roof access to the school facility.
- 5.7. Avoid dense vegetation and street furniture in close proximity to a school building, where it could screen activity.
- 5.8. Consider blue light emergency phones with a duress alarm along the building perimeter as needed to enhance security. If utilized, blue light emergency phones shall be clearly visible, readily accessible and adequately illuminated to accommodate electronic surveillance.

Main Entrance/Administrative Offices/Lobby

The following minimum standards shall be met:

- 5.9. Main entrances shall be well lit and unobstructed to allow for natural and/or electronic surveillance at all times.
- 5.10. The design shall allow for visitors to be guided to a single control point for entry.
- 5.11. The main entrance assembly (glazing, frame, & door) shall be bullet resistant and blast resistant.
- 5.12. Plans shall carefully address the extent to which glazing is used in primary entry ways, areas of high risk and areas of high traffic and the degree to which glazing is installed or treated to be bullet, blast, or shatter resistant to enhance the level of security. The district's priorities for the use of natural surveillance, electronic surveillance, natural light and other related security measures may affect this decision and the overall level of security.
- 5.13. Main entrance doors shall be controllable from a central location, such as the central administrative office and/or the school security office.

- 5.14. Video surveillance cameras shall be installed in such a manner to show who enters and leaves the building.
- 5.15. The design shall allow for providing visitor accessibility only after proper identification.
- 5.16. Door hardware, handles, locks and thresholds shall be ANSI/BHMA Grade 1.
- 5.17. Main entrance door hinge pins and critical interior doors must be tamper proof.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 5.18. The central administrative offices and/or security offices should have an unobstructed view of the main entrance lobby doors and perpendicular hallways. If feasible, administrative offices abutting the main entrance should be on an exterior wall with windows for natural surveillance of visitor parking, drop off areas, and exterior routes leading to the main entrance.
- 5.19. Walls should be hardened in foyers and public entries. Interior and exterior doors should be offset from each other in airlock.
- 5.20. Use vestibules to increase security. The entrance vestibule shall have both interior and exterior doors that are lockable and controllable from a remote location.
- 5.21. Post warning signs about trespassing and illicit behavior, citing applicable laws and regulations at primary and secondary points of entry.
- 5.22. When possible, the design should force visitors to pass directly through a screening area prior to entering or leaving the school. The screening area should be an entrance vestibule, the administration/reception area, a lobby check in station, an entry kiosk, or some other controlled area. This controlled entrance should serve as the primary control point between the main entrance and all other areas of the school.
- 5.23. Control visitor access through electronic surveillance with intercom audio and remote lock release capability at the visitor entrance.
- 5.24. Restrict visitor access during normal hours of operation to the primary entrance. If school buildings require multiple entry points, regulate those entry points with no access to people without proper authorization. Consider an electronic access control system for authorized persons if multiple entry points are utilized during normal hours of operation.
- 5.25. Other educational office space that may service the community at large should be in close proximity to the main entrance.

- 5.26. Install a panic/duress alarm or call button at an administrative/security desk as a protective measure.
- 5.27. Proximity cards, keys, key fob, coded entries, or other devices may be used for access control of students and staff during normal hours of operation. The system may be local (residing in the door hardware) or global (building or district-wide). Prior to installing a customized door access control system refer to the local authority having jurisdiction for compliance with state building and fire code.
- 5.28. Magnetic locks, if installed, shall meet the current Connecticut state building and fire code requirements for school facilities. Prior to installing magnetic locks at a school facility, refer to the local authority having jurisdiction for compliance with Connecticut state building and fire code.
- 5.29. Electric strikes, if installed, shall meet the Underwriters Laboratory (UL) standard 1034 for Burglary Resistant Electric Locking Mechanisms.
- 5.30. Consider sensors that alert administrative offices when exterior doors at all primary and secondary points of entry are left open.
- 5.31. Consider radio frequency access control devices at primary points of entry to allow rapid entry by emergency responders.

Exterior Doors

The following minimum standards shall be met:

- 5.32. The design shall allow for the points of entry/egress to be monitored by natural and/or electronic surveillance during normal hours of operation and during special events.
- 5.33. Identification signage shall be placed at all public points of entry/egress to the school. Signage should be simple and have the necessary level of clarity. Signage shall have a good color contrast.
- 5.34. Lighting shall be sufficient to illuminate potential areas of concealment, enhance natural and/or electronic surveillance, discourage and protect against vandalism.
- 5.35. All doors that serve as a means of egress shall meet life safety and fire code for emergency evacuation.
- 5.36. All exit doors shall be equipped with emergency exit hardware and not locked or secured by any other means and under no circumstances is chained shut.

- 5.37. Tertiary exterior doors shall be hardened to be penetration resistant and burglar resistant.
- 5.38. All exterior doors shall be equipped with hardware capable of implementing a full perimeter lockdown by manual or electronic means.
- 5.39. All exterior doors shall be easy to lock and allow for quick release in the event of an emergency.
- 5.40. All exterior doors with interior locks shall have the capability of being unlocked/released from the interior with one motion.
- 5.41. Door hardware, handles, locks and thresholds shall be ANSI/BHMA Grade 1.
- 5.42. Exterior door hinge pins and critical interior doors must be tamper proof.
- 5.43. All exterior doors that allow access to the interior of the school shall be numbered in sequential order in a clockwise manner starting with the main entrance. All numbers shall be visible from the street or closest point of entry/egress, contrast with its background and be retro-reflective.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 5.44. Doors that do not allow access to the building should not be numbered, so that first responders can readily identify access doors. Examples of these may be trash rooms or storage rooms.
- 5.45. Permit entry and egress during normal hours of operation through a limited number of doors.
- 5.46. Doors vulnerable to unauthorized access may be secured by adding door contacts or sensors, or may be secured through the use of other protective measures, such as delayed opening devices, or video surveillance cameras that are available for viewing from a central location, such as the central administrative office and/or security office.
- 5.47. Install face plates at exterior door latches to prevent levering.
- 5.48. Proximity cards, keys, key fob, coded entries, or other devices may be used for access control of students and staff during normal hours of operation. The system may be local (residing in the door hardware) or global (building or district-wide). Prior to installing a customized door access control system consult with your local building and fire official to ensure compliance with state building and fire code.

5.49. Magnetic locks, if installed, shall meet the current Connecticut State building and fire code requirements for school facilities. Prior to installing magnetic locks at a school facility, refer to the local authority having jurisdiction for compliance with Connecticut state building and fire code.

5.50. Electric strikes, if installed, shall meet the Underwriters Laboratory (UL) standard 1034 for Burglary Resistant Electric Locking Mechanisms.

Exterior Windows/Glazing/Films

Walls generally provide greater protection from natural and manmade hazards than windows. Windows should be as resistant as possible to mitigate natural and manmade hazards, while at the same time meeting standards for high performance, allowing for natural surveillance, and providing students and personnel the ability to communicate with outside responders in the event of an emergency. To maximize natural lighting in first-floor classrooms without wall protection, a district may also consider utilizing ballistic glass or treated glass that is blast resistant and shatter resistant to enhance the level of security and still maximize lighting efficiencies. If windows are favored over wall protection, consider additional framing with increased strength (i.e. steel).

The following minimum standards shall be met:

5.51. Windows may serve as a secondary means of egress in case of emergency. Any “rescue window” with a window latching device shall be capable of being operated from not more than forty eight (48) inches above the finished floor.

5.52. Each classroom having exterior windows shall have the classroom number affixed to the upper right hand corner of the first and last window of the corresponding classroom. The numbers shall be reflective, with contrasting background and shall be readable from the ground plain at a minimum distance of fifty (50) feet.

5.53. Plans shall carefully address the extent to which glazing is used in primary entry ways, areas of high risk and areas of high traffic and the degree to which glazing is installed or treated to be bullet, blast, or shatter resistant to enhance the level of security. The district’s priorities for the use of natural surveillance, electronic surveillance, natural light and other related security measures may affect this decision and the overall level of security.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 5.54. Set first floor exterior windows at the maximum height allowed per fire code regulations for the window to serve as a “rescue window” or secondary means of egress. This will maximize wall protection and minimize the ability for an intruder to enter the building through a window.
- 5.55. Design windows, framing and anchoring systems to be shatter resistant, bullet resistant, burglar resistant, and forced entry resistant, especially in areas of high risk.
- 5.56. Resistance for glazing may be built into the window or applied with a film.
- 5.57. Classroom windows should be operable to allow for evacuation in an emergency.

6. School Building Interior

Interior physical security measures are a valuable part of a school’s overall physical security infrastructure. Some physical measures such as doors, locks, and windows deter, prevent or delay an intruder from freely moving throughout a school and from entering areas where students and personnel may be located. Natural and electronic surveillance can assist in locating and identifying a threat and minimizing the time it takes for first responders to neutralize a threat.

The following minimum standards shall be met:

- 6.1. The design shall provide for controlled access to classrooms and other areas in the interior that are predominantly used by students during normal hours of operation to protect against intruders.
- 6.2. Emergency egress lighting, as required by the State of Connecticut building and fire code, shall be available for safe evacuation and to reduce the risk of panic related injuries.
- 6.3. Placement of interior signage shall be such that no point in an exit access corridor is in excess of the rated viewing distance, as defined by State of Connecticut building and fire code, from the nearest sign.
- 6.4. All interior room numbers shall be coordinated in a uniform room numbering system format. Numbering shall be in sequential order in a clockwise manner starting with the interior door closest to the main point of entry. Interior room number signage shall be wall mounted. Additional room number signage may be ceiling or flag mounted. Interior

room number signage specifications and installation shall be in compliance with ADA standards and other applicable regulations as required.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 6.5. Establish separate entrance and exit patterns for areas that have concentrated high-volume use, such as cafeterias and corridors, to reduce time required for movement into and out of spaces and to reduce the opportunity for personal conflict. Separation of student traffic flow can help define orderly movement and save time, and an unauthorized user will perceive a greater risk of detection.
- 6.6. Consider intruder doors that automatically lock when an intruder alarm or lockdown is activated to limit intruder accessibility within the building. If installed, intruder doors shall automatically release in the event of an emergency or power outage and must be equipped with a means for law enforcement and other first responders to open as necessary.

Interior Surveillance

The following minimum standards shall be met:

- 6.7. An intrusion detection system shall be installed in all school facilities.
- 6.8. If video surveillance systems are utilized, the surveillance system shall be available for viewing from a central location, such as the central administrative office and/or the school security office.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 6.9. Consider electronic surveillance in lobbies, corridors, hallways, large assembly areas, stairwells or other areas as a means to securely monitor those areas when natural surveillance is not available. Prior to installing electronic surveillance systems in these areas check with your local building and fire official to ensure compliance with State of Connecticut building and fire codes.
- 6.10. The design of a school facility should allow for the designation of controlled hiding spaces. A controlled hiding place should create a safe place for students and personnel to hide and protect themselves in the event of an emergency. The controlled hiding space should be lockable and readily accessible. A controlled hiding space could be a classroom or some other designated area within the building.

Classroom Security

The following minimum standards shall be met:

- 6.11. All classrooms shall be equipped with a communications system to alert administrators in case of emergency. Such communication systems may consist of a push-to-talk button system, an identifiable telephone system, or other means.
- 6.12. Door hardware, handles, locks and thresholds shall be ANSI/BHMA Grade 1.
- 6.13. All classroom doors shall be lockable and door locks shall be tamper resistant.
- 6.14. Door hardware shall allow staff to quickly lock rooms from the inside without stepping into the hallway.
- 6.15. Classroom door locks shall be easy to lock and allow for quick release in the event of an emergency.
- 6.16. Classroom doors with interior locks shall have the capability of being unlocked/released from the interior with one motion.
- 6.17. All door locking systems must comply with life safety and State of Connecticut building and fire codes to allow emergency evacuation.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 6.18. Doorways should not be recessed.
- 6.19. Optimally, doors in main corridors should swing a full 180 degrees to provide an unobstructed line of site in case of emergency.
- 6.20. If classroom doors are equipped with a side window, the window should be penetration resistant.
- 6.21. If interior windows are installed to provide lines of site into/out of classrooms or other populated areas, certain factors should be taken into consideration relating to the size, placement and material used for those windows, including:
 - 6.21.1. Minimizing the size of windows or the installation of multiple interspersed smaller windows with barriers in a larger window area to deter intruder accessibility.

6.21.2. Placing windows at a sufficient distance from the interior locking mechanism to prevent or make difficult the opening of a door or lock from outside.

6.21.3. Concealing or obstructing window views to prevent an assailant's ability to ascertain the status or presence of persons inside of a classroom during lockdown.

6.21.4. Hardening window frames to lessen window vulnerability.

Large Assembly Areas (gym, auditorium, cafeteria, or other areas of large assembly)

The following minimum standards shall be met:

6.22. Points of entrance and egress shall be clearly demarcated.

6.23. The design shall allow for the monitoring of points of entry/egress by natural and/or electronic surveillance during normal hours of operation and during special events.

6.24. Signage shall be placed at all public points of entry/egress to the assembly area. Signage should be simple, have the necessary level of clarity, and a good color contrast.

6.25. Seating and circulation layouts shall be adequate to allow for emergency exit.

6.26. Lighting shall be sufficient to illuminate potential areas of concealment, enhance natural and/or electronic surveillance, discourage vandalism and protect against vandalism.

6.27. Emergency egress lighting shall be available for safe evacuation and to reduce the risk of panic related injuries. All emergency lighting shall have adequate backup.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

6.28. The main entrance to a large assembly area should be unobstructed to allow for natural surveillance.

6.29. Electronic surveillance should be used in large assembly areas and at all exit doors to securely monitor those areas when natural surveillance is not available.

6.30. Clear lines of site should be established for easy traffic flow.

6.31. A secure and lockable storage area should be provided for storage and equipment.

Shared Space or Mixed Occupancy (Library, BOE, Mixed Use or Other Community Service)

In certain circumstances a municipality or school district may choose to share space on a school site to support other educational or community service activities, such as board of education office space, municipal government office space, recreational space, health and family service or some other use that supports the educational theme of the school, or some other use that provides a needed service to the community. All buildings located within the property line of a school facility must be included as part of the uniform risk assessment which is to be completed prior to the submission of a school construction grant application. A shared use may require enhanced levels of security that are not reimbursable under the school construction grant program.

The following minimum standards shall be met:

- 6.32. Shared space shall have separate, secure and controllable entrances.
- 6.33. The design of shared space should prevent unauthorized access to the rest of the school.
- 6.34. The design of shared space shall allow for the monitoring of points of entry/egress by natural and/or electronic surveillance during normal hours of operation.
- 6.35. Signage should be simple and clearly define the intended use and occupancy of the space. Signage shall clearly demarcate all public points of entry and egress.
- 6.36. Locate parking for shared space in areas that provide the fewest security risks to school personnel and students. The distance at which a potentially threatening vehicle can park in relation to school grounds and buildings should be controlled.

7. Roofs

The following minimum standards shall be met:

- 7.1. The design shall allow for roof accessibility to authorized personnel only.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 7.2. Access to the roof should be internal to the building. Roof access hatches shall be locked from the inside.
- 7.3. If external access exists, roof ladders should be removable, retractable, or lockable. Screen walls around equipment or service yards should not provide easy access to the roof or upper windows.

8. Critical Assets/Utilities

The following minimum standards shall be met:

- 8.1. Screens at utilities, such as transformers, gas meters, generators, trash dumpsters, or other equipment shall be designed to minimize concealment opportunities. Installation of screens at utilities shall be compliant with utility company requirements.
- 8.2. Access to building operations systems shall be restricted to designated users. Secure all mechanical rooms with intruder detection sensors.
- 8.3. Loading docks shall be designed to keep vehicles from driving into or parking under the facility.
- 8.4. Life safety equipment shall automatically be connected to a backup power supply to provide service if the main power supply is disrupted in case of emergency. The backup power supply for life safety equipment shall be maintained in accordance with NFPA 72, 2010, or the most current fire code standard adopted by the State of Connecticut.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 8.5. Shipping and receiving areas shall be separated from all utility rooms by at least fifty (50) feet unless prohibited by site constraints. If a site is determined to be physically constrained from reasonably meeting the fifty (50) foot separation requirement, maximize the separation distance between the receiving area and the utility room to the greatest extent possible. Utility rooms and service areas include electrical, telephone, data, fire alarm, fire suppression rooms, and mechanical rooms.
- 8.6. Critical building components should be located away from vulnerable areas. Critical building components may include, but are not limited to:
 - Emergency generator;
 - Normal fuel storage;
 - Main switchgear;
 - Telephone distribution;
 - Fire pumps;
 - Building control centers;
 - Main ventilation systems if critical to building operation.
 - Elevator machinery and controls.
 - Shafts for stairs, elevators, and utilities.

- 8.7. Critical building components should be a minimum of fifty (50) feet away from loading docks, front entrances, and parking areas unless prohibited by site constraints. If a site is determined to be physically constrained from reasonably meeting the fifty (50) foot separation requirement, maximize the separation distance to the greatest extent possible.
- 8.8. Emergency and normal electrical equipment should not be placed in the same electrical room.
- 8.9. Emergency generation systems shall be sized to include backup of life safety and communication systems.
- 8.10. Enclose exterior equipment in an area that is lockable and protected with bollards when located adjacent to vehicular routes.
- 8.11. Loading zones should be separate from public parking.
- 8.12. Installation of empty conduits for future security control equipment shall be considered during construction or major renovation.

9. Other Security Infrastructure and Design Strategies.

The following minimum standards shall be met:

- 9.1. The design shall include special rooms for hazardous supplies that can be locked.

The following shall be considered during the design phase of a school construction project to provide optimal safety and security:

- 9.2. Egress stairwells should be located remotely and should not discharge into lobbies, parking or loading areas.
- 9.3. Enclose dumpsters in a designated service area or surrounded on three sides by a high wall, and a securable gate. Dumpsters should not provide access to the roof.
- 9.4. Trash receptacles, dumpsters, mailboxes and other large containers shall be kept at least thirty (30) feet from the building unless prohibited by site constraints. If a site is determined to be physically constrained from reasonably meeting the thirty (30) foot separation requirement, maximize the separation distance to the greatest extent possible.

School Safety Infrastructure Standard Waiver

The local or regional board of education may apply to the Commissioner of Administrative Services for a waiver from any of the school safety infrastructure standards developed by the School Safety Infrastructure Council and the Commissioner of Administrative Services may grant such a waiver if the Commissioner determines that such compliance would be technically infeasible, unreasonable, or excessively expensive.

Other Areas of Consideration

Not all areas within and around a school facility have been specifically identified as part of the School Safety Infrastructure Standards, but nonetheless are important to ensuring a secure facility and should be carefully scrutinized for purposes of safety and security during the design phase of construction. Other areas may include, but are not limited to:

- Courtyards;
- Specialty Areas (art, music, science, computer);
- Rest Rooms;
- Locker Rooms; and
- Corridors/Hallways.

At minimum, all school facilities are required to be compliant with state and federal building and fire codes. In other areas of school design and construction, standards and guidelines may be somewhat more variable providing local authorities with the flexibility to create an increased level of safety and security while meeting broader educational objectives. School Security Technical Compliance Guidelines are currently being developed to provide design and architectural professionals with options on how to achieve a district's security objectives. The School Security Technical Compliance Guidelines will be a free standing appendix to the School Safety Infrastructure Report (see Appendix E, School Security Technical Compliance Guidelines).

Addendum 1 – School Safety Infrastructure Reference Material

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