Ad Hoc Committee
BUILDING SAFETY AND SECURITY

AHC-BSS

LITERATURE REVIEW COMMENTS

March 25, 2019

AHC-BSS

Literature Review Comments Report

This report includes comments received from the members of the AHC-BSS committee in response to reviewing the literature review of AHC-BSS publicly and privately available documents.

Table of Contents

CODES AND STANDARDS

2018 IBC

Comment #1

IBC 1010.1.4.4 was modified during the hearings to a point where it lacks any real use. As approved the section does not require or allow anything that is not already required or allowed by the standard door locks and latching code provisions. What is the value of this section?

Comment #2

IBC - Section 917, Mass Notification Systems - May be an issue - not sure NFPA 72's risk assessment determines the need for a mass notification system but rather the type of emergency communication system/mass notification system to be installed. Need to verify. Also, the occupant load trigger of 1000 or more occupants may need to be re-evaluated.

IBC – Section 1010.1.4.4, Locking arrangements in educational occupancies. Item 2 – "The door shall be operable from within the room in accordance with Section 1010.1.9." – May be an issue - Appears Section 1010.9 does not address the number of operations needed to open the door.

IBC – Section 403.5.3 – May be an issue – this section currently only applies to high-rise buildings and may need to be expanded to low/mid-rise buildings. Stairway door locking is becoming an issue with active shooter scenarios – current language in this Section may pose an issue.

Comment #3

Section 404 is not required for all occupancies but should be recommended for all occupancies.

Buildings have many uses and all should be considered when deciding when/if to do lockdown/emergency plans.

Comment #4

Fire Protection and Life Safety Systems (2018 IBC & IFC)
Excerpt from Wikipedia, Northern Illinois University Shooting, February 14, 2008, DeKalb Illinois
"Officers encountered several problems, including a piercing fire alarm that had been pulled, as well as very high radio traffic and static that made it hard to hear radio calls come in.[20] "
Comment/Proposal: Older facilities may not meet current exceptions for automatic sprinkler or occupant notification systems. Perhaps consider additional exceptions for older Group B Occupancies (specifically university teaching facilities), to permit removal of manual fire alarm boxes in public spaces and near exits. The presence of silent panic alarms that notified law enforcement of a security breach are becoming more common in central campus offices which are staffed during primary office hours. Placing independent manual fire alarms in these offices along with panic alarms might be considered as an exception that allows removal of manual fire alarms at exits. See IAFC entry under Fire Service, Comment #3.

Comment #5

2018 IBC_IFC: Section 405 employee training.

This section overall is a good write up and a good spot to add a security part if a school adopts similar writings.

406.3.4 Emergency lock down is a vague area and leads to nowhere.

Comment #6

1) All IBC and IFC relevant references.
2) New UL standards that are not considered include:
   - **UL 2524** *In Building 2-Way Emergency Radio Communication Enhancement Systems*.
   - **UL 2524A** *Building Auxiliary Radio Communication Systems*.
   - **UL 2525** *Rescue Assistance Two- Way Emergency Communication Systems for Stairwell and Elevator Landing / Lobby Area of Refuge*.
   - **UL 2900-2-3** *Software Cybersecurity for Network – Connectable Products, Requirements for Security and Life Safety Signaling Systems*.
   - **UL 2900-1** *Software Cybersecurity for Network – Connectable Products, General Requirements*.
   - **UL 2560** *Emergency Call Systems for Assisted Living and Independent Living Facilities*.
   - **UL 2573** *Mass Notification Systems*.

3) Locking arrangements and barricade type devices are very prevalent. Section 1010.1.4.4 provides guidance but possibly not fully consistent with NFPA 101.

Comment #7

2018 IBC Commentary, Section1031.2.2 Locking arrangements in educational occupancies.

The statement in the commentary for Section 1031.2.2 “This section allows key-actuated dead-bolts or other locks to be provided on classroom doors, where the teacher can choose to lock the door . . . . “is misleading. Here’s why it’s misleading:

- Adding a (separate) deadbolt lock to a classroom door – similar to what’s on the entry door of many homes – is low cost. But, adding a (separate) deadbolt lock to the classroom door likely causes conflicts with complying with the requirements for egress in Section 1010.1.9.
  - The only way that a separate deadbolt lock would comply with IFC requirements is if the added deadbolt is unlocked with the same action of turning the lever handle to unlatch the door. Unfortunately, most added (separate) deadbolt locks require an additional motion to unlock / unlatch the door – which is a violation of the requirement for egress to unlock and unlatch all door hardware with not more than one motion.
- Also, adding a separate deadbolt lock to the door would violate the intent of ANSI A117.1 and the intent of the ADA.

Bottom line – the IFC and IBC allow the use of door hardware that meets all the past and current requirements in these codes **and** is unlockable from outside the room.

❖ Unfortunately, active shooter incidents in schools are a threat in modern society and have resulted in the need to quickly secure classrooms and other occupied areas to keep unwanted intruders from entering. Many unlisted devices are being used to secure the doors from being opened. Many of these devices have not been evaluated to ensure they operate properly and do not impair door operation. These devices are being deployed in periodic lockdown drills and present the potential for students or unauthorized personnel to secure doors so rooms cannot be entered. This section allows key-actuated deadbolts or other locks to be provided on classroom doors, where the teacher can choose to lock the door and provide shelter-in-place in the classroom. This section also requires the door to be able to be unlocked from the opposite side in cases where the school administrator or responders wish to enter the room without having to make a forcible entry. Door hardware is currently available that allows classrooms to be provided with lockdown capabilities that comply with applicable Chapter 10 requirements. However, the costs of retrofitting doors with such hardware far exceed the cost of retrofitting with a simple deadbolt lock. This is a significant issue for school systems that are continually facing budget restrictions.

2018 IFC

Comment #1

Should IFC section 1031.2.1 be clarified, or definitions be developed, to distinguish between locks and latches regulated by IBC (and IFC) 1010.1.9 and security devices regulated by IFC 1031.2.1. This question came before the Virginia Technical Review board.

Comment #2

IFC – Section 406, Employee Training and Response Procedures - Possible issue – this Section addresses employee training but not training for occupants. For example, Table 405.2 distinguishes employees from occupants.

Comment #3

Jurisdictions not on the latest edition of the IFC could adopt chapter 4 with little “domino” consequences.

2015 ASHRAE Handbook, Chapter 59, HVAC Security

Comment #1

Chapter 59 – HVAC Security
Takeaways: Items within the chapter that might be adopted either as a Code ©; Design Standard (DS); or, Design or Operating Guideline (G)

Building fresh air intakes shall be located a minimum of 10 feet above grade and include a tamper-resistant protective screening device to mitigate direct insertion of hazardous materials into the air intake. ©

Design consideration will be given to implementing independent HVAC zones for lobbies, atriums, foyers, mailrooms and other building spaces where outside deliveries are intended to be unpackaged **(DS).**

Design consideration will be given to implementing independent HVAC zones isolating building areas identified as high risk during assessments of intended operations or functions. Occupied zones with independent HVAC systems shall be designed to operate at a slight positive air pressure to foyers, atriums, and lobbies. **(DS)**.

Design consideration will be given to locating interior and exterior mechanical room accesses that are inconspicuous or remote. Whenever accessed directly from public building spaces, label mechanical spaces only with a building room number as opposed to using room signage denoting "Mechanical Room" **(DS)**.

Where mechanical rooms are located on exterior walls of buildings, walls should be constructed of reinforced concrete, masonry, or other structural materials that harden the mechanical space relative to adjacent walls and from external threats. Generally, glass, spandrel, or window wall systems are unacceptable for use as barriers surrounding any mechanical room space **(G).**

For higher risk facilities, additional filtering at fresh air intakes should be considered along with other security devices such as motion sensors, cameras, and environmental sensors that can detect the presence of potentially hazardous materials entering a fresh air intake **(G)**.

Owners and operators of buildings where fresh air intakes are located at or below grade should consider structural modifications or other counter-measures that mitigate tampering or direct insertion of hazardous materials into the air intake. Such measures might include, plenums, railings, industrial screens, periodic monitoring by operational staff, or electronic security equipment **(G).**

Comment #2

Focuses on Chemical, Biological, Radiological, and Explosive (CBRE) incidents and HVAC security and EHS design/planning. Level of security is determined via a risk assessment.

Discusses numerous security and EHS design measures recommended to be included in a project based on the Basis of Design (BOD) and Owners Project requirements (OPR). For example, emergency power, redundant HVAC systems, rapid HVAC system shutdown and isolation, personal protective equipment for occupants, 100% outdoor air operation, HVAC zoning, increased standoff distances, occupant notification systems, air intake protection, increased pre-filtration efficiency, location of mechanical equipment, physical security measures, air supply and pressure gradients, sensors, mailroom and lobby measures, commissioning HVAC and EHS systems, etc. May wish to evaluate each recommendation and possibly incorporate into IBC/IMC/IFC requirements. For example, that GSA Facilities Standards for PBS currently requires the placement and location of outdoor air intakes must be in compliance with the Interagency Security Committee (ISC) criteria. On buildings more than 12 m (40 ft.) tall, intakes must be located a minimum of 12 m (40 ft.) above grade. On buildings less than 12 m (40 ft.), the intakes must be located as high as practical on the roof or on a wall. See other sections of document regarding requirements for minimum separation distances between ventilation air intakes and other building features. Outdoor air intakes must also be ducted directly to the AHU cabinet; the equipment room must not be used as an outdoor air intake plenum.

Comment #3

I like the list of questions on the second page. These are good questions for owners to consider when they are thinking about mitigation.

The grey box on page 3 is a great outline of how to get started and to know if this is something the internal staff can do or if it is best to hire someone else.
.
This document reminds me that recovery should be addressed in this process. Sometimes when we vacate the building there can be more damage due to lack of maintenance. For instance, if you shut the gas/ventilation off for some reason then your pipes could freeze causing more issues.

Shelter in place option should consider duration and the necessity for bathrooms and other medical needs (insulin, medication, eye glasses).

Emergency generators are currently required in very limited situations. When they are required, usually there are very few systems tied to them. It would be nice to come up with a list of other things to consider adding to the generator.

Air intake protection is important especially for existing buildings. A lot of existing buildings did not consider an ASHER threat when built.

With the popularity of large occupied roof and/or balcony spaces, unauthorized access into the building can be a security concern.

I think we need to recognize that when there is an unusual odor or hazes in the air people automatically think it is intentional. There was a time when the norm would be to assume an accident of some kind.

HVAC is very “out of sight out of mind” when it comes to building safety and security. I think we need to make sure it is on people’s radar for building systems needing mitigation.

Comment #4

HVAC Security:
#7 of the writings in regards to explosions is the greatest or most realistic risk. As a CBRNe guy from the Army, the rest isn’t as helpful for a school without proper training.

Comment #5

1) Chem Bio threats are prevalent and control and access to HVAC systems require security.
2) Mail rooms and packing areas should be secured.
3) HVAC systems should be secured and controlled by authorized, credentialed people.
4) PPE equipment should be available in case of an incident.

ASTM Barrier Standards

Comment #1

Physical Barriers are generally an effective deterrent for many forms of domestic crime. Bollards and Crash testing is costly and very few laboratories offer objective third party testing of such equipment.

NFPA 3000

Comment #1

NFPA 3000, a standard aimed at helping communities, organizations, and agencies craft plans to respond and recover from active shooter incidents, lays out a comprehensive set of guidelines covering all aspects of preparedness, from competencies responders should have to handle these events to facility preparedness, resource management, communication, family notification services, and more.

Comment #2

More about response than built environment.

Would be nice if there was a stronger pointer towards design elements (i.e., make a new section giving direction to other NFPA documents and/or IBC/IFC).

Good document to get stakeholders on the same page from a “planning the response” perspective.

Should there be guidelines on who the plan is shared with?

Should there be guidelines/recommendations on how often they drill their plan?
Who should be responsible for implementing NFPA 3000?

Comment #3

Good foundational material. Risk assessment (Chapter 5) is critical to security planning. Missing reference to security document, NFPA 730 (Premises Security). PPE references and recommendations seem thorough. Appendix material is very helpful in providing underlying intent of content.

FEMA P-1000: Safer, Stronger Smarter: A Guide to Improving School Natural Hazard Safety

Comment #1

The Guide was intended to provide guidance on developing effective strategies for reducing risk in schools from natural hazards.

The Guide builds upon the *Guide for Developing High-Quality School Emergency Operations Plans* (U.S. Department of Education, 2013).

The Guide focuses on operational guidance (what to do before, during and after a natural hazard event) as well as physical protection (what can be done to the structure and facility to improve safety).

The Guide discusses natural hazard such as, but not limited to: earthquakes, floods, hurricanes, tornadoes, tsunamis, high winds, other hazards (e.g., wildfires, volcanic eruptions, snowstorms, etc.)

The Guide provides guidance on:

- Identifying natural hazards that could potentially impact a school;
- Making new and existing school buildings safer for children and staff, and more resistant to damage during natural disasters;
- Planning and preparing for effective and successful response during a natural disaster;
- Recovering after a natural disaster as quickly and robustly as possible, and being better prepared for future events; and
- Engaging the whole community in the entire process in order to improve school and community disaster resilience.

Many school buildings are decades old and, thus, were constructed to older building code standards. Meaning, older school buildings are particularly vulnerable to natural hazards and in most cases, school administrators do not have the financial resources to address these vulnerabilities.

Need to address the vulnerability of the large number of existing school facilities to natural hazards. More than 53% of public schools need to make investments to be in “good” condition (ASCE, 2017a).

The Guide discusses 5 mission areas:

- Before the Hazard Event
  - Prevention - controlling adjacent vegetation to prevent wildfires from impacting a school.
  - Protection - practicing safety drills and developing policies and guidance for ongoing site-based assessments and disaster planning.
  - Mitigation - seismically retrofitting school buildings to reduce damage
- During the Hazard Emergency
  - Response
- After the Event
  - Recovery - actions to restore the learning environment for schools affected by an event.

Comment #2

Identify risks, make schools resistant to damage, plan for response, recovery, engage community.

An issue with a school impacts the entire family, not just the student.

What percentage of America has school-aged children?

Schools are often the only commercial building in a residential area.

Is a "report card" for risk something we should introduce to the built environment? Building to the minimum code does not get you an A rating.

Can we get a FEMA grant to produce templates for EOPs for different occupancies?? It would reduce the cost and resource burden on smaller businesses, non-profits, schools, etc.

Prevention, Protection, Mitigation (p.33) is really where our work will be, in my opinion.

The average public school building is over 40 years old (not to current code).

Can we develop a checklist to give building operators a picture of how out of date their building might be?

Doing a risk assessment for a school can sound daunting to school administrators since it is not their expertise. Since a risk assessment should be the first step in any ASHER action, are there resources available to make risk assessments more manageable.

Recommends using NIMS.

Need to consider all uses at the facility and times of day (just opening, field trip, right before the end of the day, after school care, etc).

Academic recovery, physical recovery, fiscal recovery, psychological/emotional recovery. Most of the time we focus on the physical but all of these are relevant.

Know what community resources are in the area. There might be other businesses or schools that can assist for sheltering until normal activities can resume.

Some response information and protocols needs to remain proprietary/private.

Map on page 114 shows percentage of low income students in public schools. This likely correlates with family income levels.

Comment #3

Good adjunct material. Especially for architects and engineers involved in design and specifications.

US Dept. of Homeland Security, Active Shooter How to Respond

Comment #1

Discusses components of emergency action plan (EAP), training exercises, and preparation best practices (includes responsibilities for facility manager and assisting individuals with special needs and/or disabilities).

Comment #2

"Because active shooter situations are often over within 10 to 15 minutes, before law enforcement arrives on the scene, individuals must be prepared both mentally and physically to deal with an active shooter situation."

Recommends run, hide, fight: in that order.

None of the response documents mention the building infrastructure except to lock the door if possible. I think that is because there is too much variability in what the infrastructure looks like and where the person may be when the incident occurs.
Recommends placing floor plans by entrances for first responders.

Comment #3

Good overview and quick reference material. Reference should be included within our document.

US Dept. of Homeland Security, K-12 School-Security Guide, 2nd Edition

Comment #1

Page 18 recommends door blockers. These devices are not standardized but most violate the IBC, IFC and IMC, at least when in use. How do we address conflicting public safety messages?

Page 19 has some good information about locks that provide for security without violating code. Can our committee do something to promote proper code compliant security locking as a proper solution to door security?

Page 21 recommends smoke cannons. When in use these would obscure means of egress. How do we address this?

Page 22 recommends use of strobes and turnstiles. Strobes are similar to smoke cannons in that they can obscure egress. Turnstiles could be a direct violation of code depending on where they are installed and how they are integrated into the means of egress system. Should there be some additional code provisions to provide for how to use these without compromising egress?

Comment #2

DHS K-12 School Security:
*Covers a lot of the spectrum of school safety for "threats"

3.2: Pre-Survey, this should be requested to have fire and police assist.

Comment #3

Guide for preventing and protecting against active shooter incidents in K-12 educational institutions.

Prevention and Protection – Connect and develop relationships with all stakeholders (community); Plan on how to handle a security event; Provide employees training resources and conduct exercises per training plan; Train employees to report suspicious activity.

DHS school security survey and user guide that identifies a school's capabilities to prevent and protect against gun violence in the areas of security/emergency management, security force, entry control, fencing and gates, building envelope, and closed-circuit video/video surveillance systems

- Survey completed by team of individuals
- The results of the survey highlight areas of potential concern and describe how specific enhancements to security and resilience measures will potentially improve the security and resilience of their facility.

DHS school security survey provides options for consideration (OFC) as recommendations:

- Resulting OFC's result in a road map to address security gaps – step by step process for improvement in school security

Every new school and existing school is unique and therefore the protective measures in place will vary based on the characteristics of the site, district, and location as well as time, resources, and personnel available to the task over time.

School security must take into consideration cost and identifying balance between security, safety, and open learning environment.

Appendix includes security products that may impact safety – "door blockers"; "apps" that focus on locking doors & deploying smoke cannons; classroom equipped with locks that can be secured inside the room; "smoke cannons" to disorient a shooter installed in ceilings and walls; "strobe lights" to disorient a shooter; turnstiles.

Comment #4

Systematic overview of relevant statistics and includes human factors related to school security and gun violence. "Product / Service" section provides a simple, helpful technology overview relative to cost and other use factors. Smoke canons are mentioned and some of these technologies may not be allowed by fire codes without approval of AHJs as they can impede first responders under certain conditions.

Final Report of the Federal Commission on School Safety

Comment #1

The Commission makes recommendations that address multiple aspects of school safety. There is no "one-size-fits all" approach for this complex issue.

Report describes best practices and recommendation on preventing school violence; protection students and teachers and mitigating the effects of violence; and responding to and recovering from attacks.

Examples: Develop comprehensive school safety plans, specialized school personnel to respond to threats, develop quality training for school personnel; develop best practices for school related security measures, technologies and innovations; schools should develop a risk assessment performed in order to identify existing vulnerabilities and support the development of a strategy to address security gaps; develop active shooter preparedness training and guidance; provide training and exercises on active shooter preparedness programs; ensure effective communication systems and rapid dissemination of information, etc.

Massachusetts: Emergency Planning and Preparedness in Schools

Comment #1

Every school has been required to have an all hazard evacuation plan since 2000.

Fire, police and school officials are required to meet before the start of each school year to review the plan.

Fire evacuation drills must be conducted on a regular basis and should include expected and unexpected times and varying conditions to simulate conditions possibly encountered in an actual emergency.

Staff should practice situational awareness and be prepared to use alternate egress means or make decisions based on the hazards presented.

Lockdown plans can be incorporated within the multi-hazard evacuation plan, and practiced as one of the minimum four required drills each year.

Fire alarms are a primary feature of fire safety in public buildings.

Classroom and egress doors must comply with the provisions of Chapter 10 of the building code.

- The code requires all egress doors to be readily openable from the egress side with a single operation, and without the use of a key, special knowledge, or effort.
- Doors may prevent entering anytime; however, they cannot restrict exiting.

Emergency planning and training are critical for mitigation of an event that cannot be prevented.

Comment #2

MA Emergency planning:
This is only fire related, nothing about active shooter.

Comment #3

MA requires all schools to have an all-hazards evac plan.

“We do not want well-intended initiatives to result in unintended consequences.”

Best practices surrounding drill notification (staff, public, etc??)

Manual pull stations reduced based on the addition of other fire alarm features.

The best policy is to ensure classroom doors are provided with single action locks and to keep the doors closed and locked at all times during school operation. Doors may prevent entering anytime; however, they cannot restrict exiting.

Comment #4

Good description of allowed door locks under “Classroom and Egress Doors.” This might be useful for others to see as an example.

Utah 2018 General Session: School Security Locks

Comment #1

This bill amends provisions of the State Construction and Fire Codes Act

This bill amends the International Building Code and International Fire Code regarding:

- Hardware height on a door for certain occupancies for purposes of a lockdown or a lockdown drill; and
- door operations provisions for locks and bolt locks, and latching and unlatching, for certain occupancies for purposes of a lockdown or a lockdown drill; and
- makes technical changes

This bill amends IBC & IFC such that:

- Group E occupancies for purposes of a lockdown or a lockdown drill may have one lock below 34 inches
- Group E occupancies may have a second lock on classrooms for purposes of a lockdown or lockdown drill, if:
  - The application of the lock is approved by the code official.
  - The unlatching of any door or leaf does not require more than two operations
  - The lock can be released from the opposite side of the door on which it is installed.
  - The lock is only applied during lockdown or during a lockdown drill.
  - The lock complies with all other state and federal regulations, including the Americans with Disabilities Act of 1990, 42 U.S.C. Sec. 12101 et seq."

Comment #2

Very few aftermarket products can meet the ADA requirements. It is vital that we do not forget about accessibility.

Comment #3

Interesting exceptions to national codes included in this document. I would like to better understand the reasons for the exceptions. Should they be considered universally (or not)?

New Jersey 218th Legislature

Comment #1

“Alyssa’s Law” - An ACT concerning school security alarms and supplementing chapter 41 of Title 18A of the New Jersey Statutes

- Public elementary and secondary school building shall be equipped with at least one panic alarm for use in a school security emergency including, but not limited to, a non-fire evacuation, lockdown, or active shooter situation
- The alarm shall not be audible within the school building

- Each panic alarm (and emergency light system) required under this section shall adhere to nationally recognized industry standards, including the standards of the National Fire Protection Association and Underwriters Laboratories (?)
-

A school district may equip its elementary and secondary school buildings with an emergency mechanism that is an alternative to a panic alarm if the mechanism is approved by the Department of Education

---

Comment #2

Silent panic alarm that transmits a signal to police and displays a light on the exterior of the building.

Required in all primary and secondary school buildings.

Allows for alternatives. I am wondering what kinds of alternatives were proposed/approved. Sounds like something that may have come up in the implementation phase of the statute.

Comment #3

Panic (or Hold up) Alarms are covered by UL 636 Standard for Holdup Alarm Units and Systems. Central Station Services are covered by UL 827, Standard for Central Station Alarm Services. Both are mentioned in the document as must adhere to nationally recognized standard including NFPA and UL but the applicable ANSI standard are not specifically included within.

Majory Stoneman Douglas High School Public Safety Commission Initial Report

Comment #1

Findings associated with incident at MSDHS:

- Assailant entered the MSDHS campus through an open and unstaffed pedestrian gate - leaving open perimeter gates unstaffed is a breach of effective security protocols.
- Assailant entered building 12 through the east unlocked door. This unlocked and unstaffed door allowed assailant access to building 12.
- All of the classroom doors in building 12 could only be locked from the exterior.
- The fire alarm activated either because a beam of light was disrupted by the muzzle flash, smoke from the gun and/or dust created by the ceiling tiles moving from the percussion of the gunshots. No pull stations were triggered or pulled anywhere on campus.
- The fire alarm caused confusion among students and staff in building 12.
- Exterior video cameras were inadequate to cover the exterior and interior of building 12 and other areas of the Stoneman Douglas campus.
- Most school personnel were inadequately trained in how to operate the MSDHS camera system.
- Law enforcement has no real-time access to school camera system.
- There were no PA system speakers in the school building hallways and exterior areas, which prevented effective use of the school's intercom system to communicate the Code Red and provide directions to students and staff.
- Classrooms lacked effective two-way communication systems (very few school personnel had school issued radios).
- Classrooms had a minimum number of designated hard corners or safe areas within student occupied spaces.
- The glass windows in the classroom doors allowed assailant line of sight access to target victims.
- Some bullets traveled through the drywall and the metal doors.

- There were no written and trained on policies regarding Code Red and lockdown procedures or information related to active shooter or assailant procedures or protocol.
- School staff members had never participated in a Code Red drill.

Recommendations based on incident at MSDHS:

- School security staff and/or “safety team” should regularly meet and train on proper protocols and procedures in emergency situations and coordinate with law enforcement.
- School campus gates must remain closed and locked and when opened for ingress and egress they should be staffed to prevent unauthorized campus access.
- Campus building doors and classrooms should remain locked during school hours.
- Teachers should be able to lock doors from within the classroom and keys should be on their person at all times.
- School should have a written, unambiguous Code Red or similar active assailant response policy that is well known to all school personnel.
- School must have an effective communication system through which everyone on campus can see and/or hear, and immediately react to, a called Code Red or similar active assailant response notification.
- Classrooms should have established safety measures such as hard corners or other safe areas and teachers should have the ability to cover door windows quickly.

IAFC Position Paper: Maintaining Building and Fire Safety During. . .

Comment #1

Recommends that fire chiefs should integrate themselves and their command staff with law enforcement officials, code officials and the leadership from their local schools to assure appropriate egress and fire protection is maintained, while working to address the security needs in schools.

Recommends that fire chiefs and staff review the current code requirements for new and existing school buildings.

Recommends evaluation of code requirements pertaining to existing schools:

- Location of manual fire alarm boxes in existing non-sprinklered schools.
- Use of pre-signal features of fire alarm system.
- Training scenarios for fire alarm activation during a lock-down/defend-in-pace situation.

Comment #2

Fire chiefs are encouraged to coordinate with building operators and law enforcement.

There are many more alarms than fires in schools.

Removal of pull stations should be a viable option. MN has reduced or removed many manual pull stations via amendments to the IFC for decades without an increase in fire death/injury.

Drills should mirror the plan in place.

Use NIMS and common terminology.

Rescue Task Force is a best practice but might not be realistic in many parts of the country.

Comment #3

Excerpt from **Maintaining Building and Fire Safety During Active Assailant Events and Other Terrorist Events** **IAFC:** One of these considers the use of the pre-signal feature per NFPA 72 (23.8.1.1). Once approved by the AHJ, the initial fire alarm feature will activate in school offices. This will allow human action, such as activation of the pull station in the office area. If no action after one minute, the alarm will automatically activate on its own.

Comment #4

It is the desire of the IAFC that fire chiefs should integrate themselves and their command staff with law enforcement officials, code officials and the leadership from their local schools to use that combined knowledge to assure appropriate egress and fire protection, while working to address the security needs of our schools. It is paramount that this team review procedures, training, and desired changes based on all threats.

In the United States, over the last 10 years, we average approximately 5,000 fires in our educational occupancies per calendar year. These may include situations where the fire is controlled by a working fire sprinkler system. In addition, the data from 2015 shows that the fire service responded to over 150,000 fire alarms in educational buildings.

The challenge is our existing schools that may not have fire sprinklers and have manual fire alarm boxes at every exit/entrance, etc. Suggestion: let the Authority Having Jurisdiction (AHJ) - in many

cases this will be the fire marshal or Building Official - review the school facility. If there are smoke detectors in the corridors, heat detection systems in hazardous areas as well as other common areas in the school (shops, kitchen, administration offices), the existing manual alarm boxes at the exit/entrance doors may be removed provided the general evacuation alarm can be activated from a centrally located point.

An action item for every school to address is once a school is in a lock-down situation, what is their response when a fire alarm is activated? This is a training issue that is not easily managed, except through hyper vigilance of administration and teachers.
Develop and train on response plans to alert first responders that the building is in lock down and that responding firefighters to a fire alarm are accurately informed as the specific hazard to which they are responding.

Develop training to include when a classroom should be evacuated due to active fire in a hallway or smoke entering a classroom with or without the presence of an assailant. An alternative means to evacuate a classroom that is under assault or fire and smoke should be identified.

There is talk about having schools go into “lock down” and/or defend-in-place when a fire alarm is activated. Staff should be trained to evaluate current conditions and determine proper egress actions while remaining vigilant to movement of students. Sheltering in place is a dire concern when the threat of fire is a possibility, especially depending on building characteristics. We cannot forget the multiple fires that are occurring in our schools.

IAFC Position Paper: Active Violence and Mass Casualty Terrorist Incidents

Comment #1

The position statement focuses on active shooter incidents.

Recommends local jurisdictions should build sufficient public safety resources to deal with these incidents.

- NFPA 3000

Recommends local fire, EMS and law enforcement agencies have common tactics, common communications capabilities and a common lexicon for seamless, integrated operations.

Recommends local fire, EMS and law enforcement agencies establish standard operating procedures to define each discipline’s role.

Recommends fire departments utilize the Rescue Task Force or other warm zone techniques when planning the response to an active shooter. A Rescue Task Force is a team deployed to provide point-of-wound care to victims where there is an on-going ballistic or explosive threat. These teams treat, stabilize, and remove the injured in a rapid manner, while wearing Ballistic Protective Equipment and under the protection of law enforcement officers.

Recommends fire departments work with local EMS and law enforcement agencies to prepare for active shooter incidents.

Recommends fire chiefs assist in developing plans for mass casualty incidents that include all stakeholders. Facility specific plans should be developed for high-risk locations.

Recommends fire departments work with EMS and law enforcement agencies to train the civilian population to take appropriate protective steps by using the U.S. Department of Homeland Security’s “Run, Hide, Fight” training or other nationally recognized training, and to help provide lifesaving aid through “Stop the Bleed” training.

Comment #1

Some of the proposed or implemented solutions specifically affecting classroom doors, while well intended, may compromise aspects of life safety while attempting to address security.

The “School Security – Suggested Classroom Door Checklist” identifies many parameters which should be satisfied when selecting and installing hardware on classroom doors intended to increase security in the classroom.

- Provides code references to 2006, 2009, 2012, 2015 IBC & IFC

Comment #2

Even though a lot of these documents are about students it is still relevant to other occupancies. Students are a vulnerable population although they are most likely very familiar with their surroundings. Other occupancies might have a vulnerable population with very little familiarity with their surroundings. Yet others will have very able bodied people, etc.

School administrators are not security experts. This can make them targets for people trying to sell certain products and/or systems.

Lockdontblock.org
https://binged.it/2EQULyB - the video mentioned in the article.

I appreciate that they are advocating for their industry to see the big picture and sell more than a product.

The cost estimates are quite large. I assume the estimate is if they were to start with no existing infrastructure.

Comment #3

Classroom doors are required to meet Federal accessibility laws and building and fire code requirements which include the ability to operate door hardware with no tight grasping, tight pinching, or twisting of the wrist; door operating hardware must be located between 34” and 48” above the floor. Federal accessibility laws and building codes require the bottom 10” of the push side of the door to be a smooth surface.

The testimony and other evidence presented to the Commission reveals that there has never been an event in which an active shooter breached a locked classroom door.

I think the phrase “be able to lock from the inside” has been interpreted to mean “blocked from the inside.”

Approach safety and security with collaboration with all stakeholders.

Discourage deactivation of fire alarm systems.

Share drill dates/times to not confuse occupants (no surprise drills).

Encourage positive alarm sequencing if safety features are in place.

Comment #1

Following tragedy in Parkland, FL, NASFM provides position statement on school safety encouraging stakeholders that diminishing fire safety protection, in the spirit of addressing an active shooter threat, is not in the best interest of enhancing holistic school safety.

Provides reminder that the key to any emergency preparedness is to plan and train.

Discourages any deactivation, tampering, or modification of fire alarm systems and associated supervised life-safety and egress systems.

Encourages that fire drills be conducted as recommended by the consensus codes with frequency thresholds maintained.

Promotes upgrading buildings to a more current edition of the consensus codes can allow for the use of delayed alarms to include positive alarm sequence.

REPORTS, SUMMITS, WORKSHOPS AND SYMPOSIUMS

NFPA Workshop on School Safety, Codes and Security, *Final Report* (December 3-4, 2014)

Comment #1

Report summarizes the results of the National Fire Protection Association (NFPA) School Safety, Codes and Security Workshop, held December 3–4, 2014, in College Park, Maryland, and sponsored and hosted by NFPA.

The central theme of the workshop focused on school violence.

School violence has been linked in some form or another with fire safety.

Emerging themes of the report:

- Current codes do not address security threats — security is not a specific scope or goal.
- Current resources are at acceptable levels but are not mandated for adoption.
- There is a need to incorporate door-locking and evacuation and relocation concepts that are contrary to current standards.
- Who would enforce the security-related aspects needs to be determined.
- The security/risk management process must be tailored to the environment.
- There is not a single security threat but rather numerous security threats.
- There needs to be agreement on standardized terminology and definitions for lockdowns/lockouts.
- Every school and college must have a visitor plan.
- All stakeholders — first responders, designers, administrators, and faculty — must be engaged.
- Door locking and mass notification systems.
- Cross-training and cooperation between law enforcement, EMS and fire department personnel.

NFPA 3000 Standard for Preparedness and Response to Active Assailant and/or Hostile Events, was created to integrate these issues.

Comment #2

The problem statement doesn't appear to be well established.

2014 Workshop document talks about developing specific guidelines/procedures for lock downs. Does this exist yet?

When talking about codes they mention it should be integrated, not have specific tradeoffs. It might be helpful to have common examples. If ____, then ____.

Exercises need to be conscientious of the likely perpetrator. In other words, most of the assailants are familiar with the building because they work there. Not all the pieces of the plan need to be shared with everyone.

Caution: devices used to lock out a threat could lock in a threat!

Most people are not trained incident commanders. Dealing with these incidents do not come naturally to them.

Maybe have a list of "shall not use" items such as in building tear gas, bars on windows, and floor bolts.

Ingress options should be looked at. Normally we only consider ADA for ingress but more and more people want to use barriers which impact fire access. There should be a balance.

It would be good to have a CPTED presentation to our group; an expert in this area.

Don't forget the buildings have many uses, not just the one the architect designed for.
Appendix B does not include any ICC documents.

NFPA Building Safety and Security Workshop (May 2018). . .

Comment #1

Workshop focused on safety vs security balance for all occupancies.

Examples of discussions during workshop included, but was not limited to include:

- Expand the understanding of current code provisions that already address security related challenges in the built environment. This effort will be directed more towards the policymakers who may not realize the number of available options that currently exist to secure buildings from unwanted intruders.
- Maintain vigilance in the codes to prevent and prohibit the use of ad hoc door locking devices.
- Notify local first responder agencies about restricted access to buildings and ensure they have the ability to make entry from other points that are normally not available.
- Utilize the concept of intelligent fire alarm systems (most likely using MNS concepts) to integrate voice and digital messaging strategies that can alert building occupants of non-fire events and emergencies.
- Examine best approaches or methods to integrate security measures into codes and standards rather than relying on them as a stand-alone afterthought with regard to the built environment.
- Examine the creation of a federal entity to conduct neutral follow-up incident reviews after targeted violence events to review the incident from a top-to-bottom perspective. This entity could be modeled after the NTSB or NCST.
- Emphasize the need for first responder agencies to have interoperability between communication systems and related hardware.
- Consider development of an educator curriculum on security that could be offered to school faculty and administrative staff.
- Develop a national campaign related to the "Run. Hide. Fight." curriculum that would help prepare citizens on the appropriate actions to take during these events.

DATA/STATISTICS

Global Terrorism Database

Comment #1

Relatively speaking we have few terrorist fatalities and industries when you compare to the industrialized world.

Indicators of School Crime and Safety: 2017

Comment #1

Published in 2017 but most of the data is 2014-2015 school year.

Surprised that more elementary school teachers where physically threatened than secondary school teachers.

School use of security cameras has increased from 19% to 81%. Controlled access has increased from 75% to 94%.

Schools having a plan in place for ASHER increased from 79% to 92%. Who are the 8% who haven't done it?

Security staff being present is highly dependent on the number of students enrolled.

More teachers die of violent death every year than I would have thought considering the ratio of teachers to students. In 2014-2015, 29 students died of violent death and 18 teachers.

Surprised that violence has trended down. We hear about it so much that it appears to be increasing not decreasing.

Students being afraid of an attack has significantly decreased. Something must be working.

At post-secondary schools, forcible sex offenses have now surpassed motor vehicle theft and are approaching the same rate as burglaries. It is a reminder that there are plenty of physical crimes which are not ASHER events.

MAGAZINE/NEWS ARTICLES

EMS WORLD: Parkland: Lessons Learned

Comment #1

Responders don't take the infrastructure for granted. They know every building is different and just take the situation as it comes.

Interagency training and coordination is key. (particularly bleeding control training).

Having good relationships with the hospitals and knowing their capacity helps with survivability.

Mental health resources are essential for responding personnel, impacted occupants, and surrounding community.

From personal experience: After the Las Vegas shooting we had a request from an office building that our fire alarm test not be during office hours. During a recent fire drill one of the occupants had a panic attack thinking it was someone intending to harm her.

For responders: don't water down the training. Make it as "real-life" as possible.

NPR: The Shootings That Weren't

Comment #1

In the 2015-2016 school year, "Has there been at least one incident at your school that involved a shooting (regardless of whether anyone was hurt)?"

Accurate data is very thin for ASHER events. This article is about schools which are required to report but other occupancies have no required reporting mechanism.

NPR confirmed at least 59% of the reporting was an error.

NFPA Journal September/October 2018: Campus Safety in the Age of active shooters

Comment #1

FBI defines active shooter as "defined as one or more individuals actively engaged in killing or trying to kill people in a populated area."

I see a 3 legged stool: infrastructure, planning, response.

Run Hide Fight

Comment #1

There is a view that we should not be putting the burden on students but rather the teachers and administrators tasked with their care.

“Fight” and “Counter” are last options. I think it is intended to empower people not to make them into unarmed law enforcement.

This really highlights the emotional sensitivity surrounding ASHER events. It is hard to make rational, fact based decisions with such an emotional issue.

SAFE SCHOOLS Codes & Standards Save Lives – May 2018 (Door Security + Safety

Comment #1

SAFE SCHOOLS Codes & Standards Save Lives – May 2018 (Door Security + Safety)

Article infers there appears to be a lack of consensus in building codes regarding school security – new schools versus existing schools

Average age of existing school - 44 years

Codes and standards focus on fire – no student fatality in school fire in over 50 years

- Schools practice evacuation drills and have emergency preparedness plans in place.
- School staff knows roles and responsibilities in the event of a fire.

Partner Alliance for Safer Schools (PASS) - organization focused on establishing security standards for schools (K-12).

- Challenges for schools include determining what classroom security is needed and how to fund security improvements.
- School administrators are experts in running schools not security experts; new security products may impact life safety codes & standards and ADA.
- Each school is different and must be properly assessed to determine the appropriate solutions.

The Door Hardware Institute (DHI) is promoting school security be incorporated in codes & standards.

PASS looking at a tiered system roadmap that incorporates layers such as: procedures/roles & responsibilities, drills, school property perimeter, parking lot perimeter, building perimeter, video surveillance, visitor control, classrooms, emergency notification.

Comment #2

Interesting Tier approach to school safety. Security is not a one size fits all solution. The tiered approach makes sense and should be strongly considered within our document. The Cost per Facility graphically illustrates the fact that security does come at a price and appropriate security measures should be routinely budgeted similar to other operational cost.

YOUTUBE VIDEOS

School Training

Comment #1

Alert, lockdown, inform, counter, evacuate (ALICE) is not chronological but rather gives options.

Run, hide, fight – this is chronological.

Will likely be an abundance of calls to dispatch from the classrooms.

Do not want other people to be mistaken for the aggressor.

Alice Training Institute

Comment #1

Proprietary program.

Advocate that lockdown cannot be the only option. Does not believe this is an adequate response.

Minimum 5 minute response time for PD.

Not everyone agrees with ALICE.

Typically lone intruder which gives occupants an advantage that ALICE attempts to take advantage of.

This article talks about opposition to ALICE training as it applies to schools and their "counter" tactic: http://www.schoolsecurity.org/trends/alice-training/ (see Run, Hide, Fight above)

Alert, Lockdown, Inform, Counter, and Evacuate: Counter is only one option.

OTHER RESOURCES

HTTPS: //IDIGHARDWARE.COM/SCHOOL/

No comments received.

MISCELLANEOUS COMMENTS

Comment #1

I also have two more observations.

1. I did not see any mention of providing cyber security as an element of a risk assessment and acknowledged security threat. This is a very real aspect of security and it should be recognized as a threat for IoT connected technologies, especially access control systems and video surveillance equipment. I've included a linked article that provides a general overview of connected building cyber security awareness.

https://news.ul.com/news/modern-day-cyber-pirates-phish-portals-not-high-seas.

2. If the committee is interested in seeing any UL standards for the committees use and review, I'd be glad to provide watermarked copies for the group.

Comment #2

I found the ASHRAE article most helpful. I separated out my takeaways as items that I thought might result in code, versus items that I would recommend that USU adopt as either a design standard or design guidelines for campus buildings. After reading the NFPA enclosures, I prefaced my comments in reference to excerpts that I have extracted from Wikipedia on the more notable active shooting incidents. Essentially, while reading the accounts of the shootings, I highlighted building issues that appeared to hamper victims and first responders and provided comments or proposals. On that note, as these accounts appear to be written primarily from a law enforcement forensic perspective, I wonder how much more could be learned if first responders, SWAT, and military personnel who have engaged in urban warfare were asked to talk about their interactions with buildings and infrastructure during actual events, as well as during training exercises. Essentially, what would they say about exits, vestibules, windows, architectural glass, nooks, roof overhangs, atriums, building utilities, stairway designs, etc.

Many of the enclosures relate to k-12 issues. I read through those and have only a general observation. K-12 can be more effectively addressed through codes and stringent operational guidelines as these are already highly restricted environments (my inner city high school in Houston was run more like a prison, even in the 1970s…) The real challenge are public buildings at universities, hospitals, and other campus environments. Where safety and security code development may be much more elusive for these facilities, design standards and guidelines from "lessons learned" might be very helpful to architects and engineers. I would hope that our ICC committee is able to consider each of these issues (codes and guidelines) in its work moving forward, as the committee does have a vast array of knowledge and experience within its membership.

Comment #3

Excerpt from Wikipedia, shooting at Cinemark Theater, July 20, 2012 in Aurora, Colorado

The shooting occurred in Theater 9 at the Century 16 multiplex (operated by Cinemark), located at the Town Center at Aurora shopping mall[5] at 14300 E. Alameda Avenue.[6] Police said Holmes bought a ticket, entered the theater, and sat in the front row. About 20 minutes into the film, he left theater 9 through an emergency exit door beside the movie screen, with direct access to the lightly used parking area at the back of the complex, while propping the door slightly open with a plastic tablecloth holder.[7] There were about 400 people inside theater 9.[8]

Civil litigation

Three victims sued Cinemark Theatres in the U.S. District Court for the District of Colorado on September 21, 2012 for the company's alleged negligence in failing to provide adequate safety and security measures.[160] Their attorneys released the statement "Readily available security procedures, security equipment and security personnel would likely have

prevented or deterred the gunman from accomplishing his planned assault on the theater's patrons."[161]

Comment/Proposal: Perhaps require security equipment by code that notifies a responsible party within the facility that emergency only exit door was breached. Alternately, require audible fire alarms on emergency exit-only doors. This alternate may pose disadvantages to first responders, or considered to be intentionally useful to the perpetrator.

Comment #4

Excerpt from Wikipedia, Virginia Tech shooting April 16, 2007, Blacksburg Virginia

Norris Hall shootings

About two hours after the initial shootings, Cho entered Norris Hall, which housed the Engineering Science and Mechanics program among others, and chained the three main entrance doors shut. He placed a note on one of the chained doors, claiming that attempting to open the door would cause a bomb to explode. Shortly before the shooting began, a faculty member found the note and took it to the third floor to notify the school's administration. At about the same time, Cho had begun to shoot students and faculty on the second floor. The bomb threat was never called in.[6]:89[29] ***The first call to 9-1-1 was received at 9:42 a.m.***[30][31]

Comment/Proposal: Can the industry be encouraged to design fixed interior and exterior door pulls at double entrance doors that cannot be chained closed. A pull with an open bottom and which is slightly angled inward could not be chained or cabled in a way that would prevent entry or egress.

Comment #5

Excerpt from Wikipedia, Shooting at Santa Fe High School, May 18, 2018 Santa Fe Texas

The shooter began firing a weapon into an art class at the school at around 7:40 a.m. CDT.[5] ***The incident occurred in the school's art complex which consists of four rooms connected to one another with interior hallways, and other rooms.***[6] ***Witnesses said the two targeted classrooms are connected by a ceramics room the shooter accessed by damaging a door window.***[7]

Comment/Proposal: Do open passages between classrooms or large spaces with too few exits provide greater opportunities for assailants and challenges for potential victims and first responders?

Comment #6

Excerpt from Wikipedia, Shooting at Stoneman Douglas High School February 14, 2018, Parkland, Florida

Cruz entered Building 12,[note 2] ***a three-story structure containing 30 classrooms typically occupied by about 900 students and 30 teachers.***[21] ***Armed with an AR-15 style semi-automatic rifle***[note 3] ***and multiple magazines,***[24] ***he activated a fire alarm and began firing indiscriminately at students and teachers.***[22][25][26] ***The fire alarm caused confusion because there had been a fire drill earlier in the day.***[27]

Geography teacher Scott Beigel was killed after he unlocked a classroom for students to enter and hide from the gunman.

Student Peter Wang was last seen in his Junior Reserve Officers' Training Corps (JROTC) uniform, holding doors open so others could get out more quickly; Wang was unable to flee with the students when Cruz appeared and fatally shot him

The last victim to remain hospitalized, 15-year-old Anthony Borges, from Venezuela, was released on April 4. Dubbed "the real Iron Man", Borges was shot five times after he used his body to barricade the door of a classroom where twenty students were inside.

Comment #7

Excerpt from Wikipedia, Columbine High School Massacre, April 20, 1999, Columbine, Colorado

On Tuesday morning, April 20, 1999, Harris and Klebold placed two duffel bags each containing propane bombs in the cafeteria, set to explode at approximately 11:17 a.m, during the "A" lunch shift.[n 11] Propane bombs were also placed in the cafeteria's kitchen. The security staff at Columbine did not observe the bags being placed in the cafeteria, ostensibly because a custodian was replacing the school security video tape as it happened around 11:14 a.m.[78] The bags holding the bombs were supposedly first visible on the fresh security tape, but were not identified as suspicious items. Others have suggested the bombs can be seen being placed on the security video around 10:58 a.m.[79] Shortly after the massacre, police also took seriously the suggestion that the bombs were placed during the "after-prom" party held the prior weekend. The cafeteria bombs failed to explode. Had these bombs exploded with full power, they could have killed or severely wounded all of the approximately 488 students in the cafeteria, and possibly made the ceiling collapse by destroying the pillars holding it up, dropping the library into the cafeteria.

SWAT response

By noon, SWAT teams were stationed outside the school, and ambulances started taking the wounded to local hospitals. A call for additional ammunition for police officers in case of a shootout came at 12:20 p.m. Authorities reported pipe bombs by 1 p.m., and two SWAT teams entered the school at 1:09 p.m., moving from classroom to classroom, discovering hidden students and faculty.[122] They entered at the end of the school opposite the library, hampered by old maps and unaware a new wing had recently been added. They were also hampered by the sound of the fire alarms.[123]

Comment/Proposal: Fire alarm sounds are again noted as a hindrance. Lack of knowledge of building layouts and changes by law enforcement is not so much a code issue, but definitely a training and operations issue.

Comment #8

My comments are general-not focused on a specific document. We (my division) deal with schools every day. That in combination with the literature review reinforces the idea that it is not a one size fits all. Fire and building codes need to function in a symbiotic relationship. Schools struggle every day with trying to keep their classrooms safe while being in compliance with fire code. Security to schools is a life safety issue as much as the fire code. Unfortunately with each new “school incident” security becomes a higher priority to school administrators and parents. School administrators struggle to balance the need to function with day to day activities and the need to be ready for “that tragic day”. They are looking for common sense, practical and innovative solutions from code officials/governing bodies to balance these needs and ensure the integrity of all codes are maintained. These issues are not unique to schools.

Training is key to safety and security-I caution the committee on recommending a specific training program. Neither ALICE nor RUN, HIDE, FIGHT is appropriate in all situations-actions taken in an active shooter event depend on abilities, space, options, information available, situational awareness etc. Training recommendations should remain broad based on audience needs and available options.

After action reports of violent events often highlight communication breakdowns. Recommending redundancy in communication systems is key.

Comment #9

After reviewing the Literature Review Comments, I agree with the information provided and the analysis offered by the authors.

I thought it would be also informative to offer the following information on the INTEGRATED RAPID VISUAL SCREENING OF SCHOOLS: *A How-to Guide to Mitigate Multihazard Effects Against School Facilities* (IRVS for Schools). While focusing specifically on schools, the guide was developed in partnership with the Connecticut School Safety Infrastructure Committee, the Katy Texas Independent School District and the St Clair County Michigan Office of Homeland Security and Emergency Management, solely for the purposes of evaluation of the information and procedures identified within and towards the development of an "IRVS for Safe Schools" tool.

The development of the manual followed discussions and workshops focusing on the need to develop school safety. Notably the participants are school administrators, parents and educators who are facing the challenges that are concerning every day in schools across the country.

The manual provides information needed to use Integrated Rapid Visual Screening for Schools to comprehensively quantify the risk and resilience of a single school or a group of school buildings to manmade (as applicable to schools) and selected natural hazards that are capable of causing catastrophic losses in fatalities, injuries, damage, or interruption of operations. The IRVS for School Safety is intended for use in the design of new schools and for the assessment and retrofit of existing ones. The methodology can be implemented relatively quickly and allows the identification of cost effective mitigation measures in an accurate manner.

IRVS for Schools is based on other manuals that are part of the Building Infrastructure Protection Series (BIPS) published by the United States (U.S.) Department of Homeland Security (DHS) Science and Technology Directorate (S&T).

I have attached a pdf copy of the document. It can also be accessed at:
http://www.ncef.org/content/integrated-rapid-visual-screening-schools

---

Comment #10

Special Locking Arrangements
We know that many schools are being approached by vendors to install non-code compliant locking devices. Properly installed listed hardware should be the only option for all schools. Removing door stops, prohibiting use of barricade devices, ensuring that locks work, and that closers are operational will not only aid in security but ensure fire safety and egress is still met.

Today is a perfect time for fire chiefs to start this conversation with law enforcement and local schools, if it hasn't already been started. Utilize the expertise around you in the fire department, building department, state fire marshal's office, school officials and local law enforcement. We know that there needs to be a delicate balance between fire safety and school safety, and current codes already provide that intent for you. Working together is our priority, and we want everyone to have these current and new resources available.

Finally, we cannot forget that school fires in our nation's history have changed the very way we live.

Comment #11

Fire Alarm Systems
Many fire chiefs are being asked how to officially and safely remove manual pull stations (technically referred to as manual fire alarm boxes in the code) in a school building. Both model codes (NFPA 1 and IFC) as well as NFPA 101 have parameters when the building is equipped with automatic fire sprinklers that some pull stations can be removed. Remember we want to keep a means for activation of the alarm system so our students are properly alerted with the threat of a fire.
New schools built today that are provided with automatic fire sprinklers, may only require manual fire alarm boxes in normally occupied space.

This is addressed in the International Building Code (IBC) section 907.2.3 or NFPA 101 section 14.3.4.2.3.2 (new construction) and NFPA 101 section 15.3.4.2.3.2 (existing construction).

The same allowance to remove manual fire alarm boxes is also permitted by NFPA 101 when smoke detectors are present in the corridors and heat detectors are provided in other areas. This is addressed in NFPA 101 section 14.3.4.2.3.1 (new construction) and NFPA 101 section 15.3.4.2.3.1 (existing construction).

The challenge is our existing schools that may not have fire sprinklers and have manual fire alarm boxes at every exit/entrance, etc. Suggestion: let the Authority Having Jurisdiction (AHJ) - in many cases this will be the fire marshal or Building Official - review the school facility. If there are smoke detectors in the corridors, heat detection systems in hazardous areas as well as other common areas in the school (shops, kitchen, administration offices) the existing manual alarm boxes at the exit/entrance doors may be removed provided the general evacuation alarm can be activated from a centrally located point.

While compliance with the two features previously discussed will allow you to maintain a code compliant building, other ideas have been contemplated but have yet to be sanctioned as an acceptable solution. One of these considers the use of the presignal feature per NFPA 72 (23.8.1.1). Once IAFC Position Statement Maintaining Building and Fire Safety during Active Assailant Events and Other Terrorist Events Page 3 of 8 approved by the AHJ, the initial fire alarm feature will activate in school offices. This will allow human action, such as activation the pull station in the office area. If no action after one minute, the alarm will automatically activate on its own.

An action item for every school to address is once a school is in a lock-down situation, what is their response when a fire alarm is activated? This is a training issue that is not easily managed, except through hyper vigilance of administration and teachers.

Ensure plans address the response to a fire alarm when a lock-down has been initiated.
Ensure training of teachers and staff has occurred and a means for mass communication is established within the school. Develop and train on response plans to alert first responders that the building is in lock down and that responding firefighters to a fire alarm are accurately informed as the specific hazard to which they are responding.
Develop training to include when a classroom should be evacuated due to active fire in a hallway or smoke entering a classroom with or without the presence of an assailant. An alternative means to evacuate a classroom that is under assault or fire and smoke should be identified.

Staff should be trained to evaluate current conditions and determine proper egress actions while remaining vigilant to movement of students. Sheltering in place is a dire concern when the threat of fire is a possibility, especially depending on building characteristics. We cannot forget the multiple fires that are occurring in our schools.

Comment #12

Increased Standoff Distances
Close proximity to publicly accessible areas increases the risk of an external event having catastrophic consequences for a facility. The presence of a buffer with controlled or limited access can significantly lessen the effect of an airborne contaminant release or blast. This standoff area must have limited access to the general public and should limit vehicular traffic to emergency access, deliveries, and facility maintenance. Increased standoff distances also provide additional area for emergency first responders during or after an event. Although these buffer areas present an additional cost associated with capital investment, they also provide occupants with aesthetic benefits, including additional green space.

Comment #13

Occupant Notification Systems
The moments immediately before, during, and after an event can be confusing for building staff and occupants, especially if some occupants panic and do not fully understand what actions should be taken. Most buildings include some type of notification system that can be used to communicate to occupants in critical situations. Systems include loudspeakers, alarm horns and strobes, automated telephone alerts, or computer notification systems; at minimum, many buildings can implement mass e-mail notification or designation of certain personnel to serve as runners with little or no cost. Building managers may consider providing emergency action information cards for all occupants to keep in their work spaces, to refer to during
an emergency.

Comment #14

Air Intake Protection
For new buildings and HVAC systems, fresh-air intakes should be elevated to help prevent malicious acts (e.g., inserting a hazardous material directly into the intake) and minimize the concentration of hazardous materials during a ground-level release. Intakes should be placed at the highest practical level on the building, at least 10 ft above grade. Most ground-level releases near the building will remain close to ground level, and the concentration of hazardous material in the air decreases with increasing height. Existing fresh-air intakes close to ground level can be modified to prevent physical tampering by placing fencing or barriers or building a plenum around the intake to limit potential intake of contaminants. Physical access to system intakes should be limited, and security cameras focused on intake areas may be considered. To prevent direct tampering of intakes, a sloped screen should be installed at the top of the intake to prevent direct insertion of any hazardous substance or container.

Comment #15

Explosive Incidents
Detonation of high explosives near a building generates pressures that act on all exposed surfaces. The magnitude of pressure depends on the size and shape of the charge, distance from the charge, and any intervening barriers. In addition to increased pressures, blasts may generate projectiles from either loose materials or fragments from damaged components. This section considers only loads that do not generate significant structural damage; it is assumed that, if the structure is severely damaged, continued operation of the HVAC systems is not crucial. Also, it is important to remember that life safety is the primary goal of all protective systems. This section deals strictly with HVAC equipment and systems, but any solutions must not compromise the safety of building occupants.
