

Building Safety and Security Assessments

Aligning Codes and Building Design Standards with the Realities of Increased Targeted Violent Acts within the Built Environment

Prepared for the ICC Ad Hoc Committee on Building Safety and Security

Building Safety and Security Assessment Workgroup

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Introduction

Since the 1966 slayings of 11 people and the wounding of 31 others on the University of Texas campus, there have been countless additional, targeted acts of violence in buildings and on the grounds of public schools, university campuses, churches and other high occupancy facilities. These acts of violence have resulted in hundreds of deaths and injuries as well as traumatic stress among survivors that will likely endure over their lifetimes.

Because human-initiated, targeted acts of violence in the built environment have increased in number and severity, the International Code Council convened an ad hoc committee in September 2018 to comprehensively explore and assess the current status of building safety and security measures being employed during design and construction of facilities. The charge of the multidiscipline Ad Hoc Committee on Building Safety and Security included a review and evaluation of existing codes and other available resources. The Committee was then tasked with making recommendations to stakeholders who have an obligation to provide reasonable levels of safety and security to building occupants. Many of these stakeholders were represented on the Committee, including a broad cross-section of design professionals, code officials, architects, engineers, first-responders, facilities managers, building product manufacturers, security professionals, and law enforcement personnel.

In 2018, the year that the Committee was formed, the FBI designated 27 separate shooting events in 16 US states as active shooter incidents. These incidents resulted in 213 casualties, including 85 killed and 128 wounded (<https://www.fbi.gov/file-repository/active-shooter-incidents-in-the-us-2018-041019.pdf/view>). In 2019, mass shootings involving four or more victims, as defined by the Gun Violence Archive, numbered 395 by the 335th day of 2019. These targeted violent acts resulted in 31 mass murders, according to the Gun Violence Archive. (<https://www.gunviolencearchive.org/>).

After the Committee was convened, the membership was organized into seven independent workgroups, each representing one of the many facets of building safety and security in the built environment. The following report was produced by the Assessment Workgroup, which was tasked with researching and evaluating existing building safety and security assessment practices. After thoroughly researching existing assessment resources, the Workgroup employed its own unique experience to develop and propose new concepts for advancing the understanding and importance of building safety and security among the many stakeholders, including those charged with the duty to provide emergency response to facilities where a targeted violent event is occurring.

The premise of this paper, is that in order to enhance building safety and security in addressing targeted violent events in the built environment, all stakeholders should be focused on design elements, devices, and protocols that hinder those who intend to commit violent acts, while providing some measure of safety and security to building occupants, and by facilitating quicker and more effective response from emergency personnel. The paper does not focus on cyber security or building security as it relates to the intent of current fire and building codes, or security measures related to safeguarding physical assets in a building.

The paper will propose a framework for advancing the acceptance and adoption of the building safety and security building assessment (BSSA) as a standard part of the design process, and that the BSSA process becomes incorporated within future code development. The report will make recommendations for training and certification of BSSA Assessors as well as other facilities stakeholders.

The primary objective of this paper is to stimulate thought, communication, and future research on the topic of safety and security assessment among the multiple stakeholders, and with the realization that there is much work left to be accomplished.

Definitions and Disclaimers

The Assessment Workgroup has determined that within the context of this document, the following words and terminologies are defined accordingly:

High occupancy or high-risk buildings may be used interchangeably in this report. High occupancy buildings generally refer to all or portions of the ICC Classification Groups A1, A2, A3, A4, A5 (Assembly), B (Business), E (Educational), I-2 (Institutional), (F) Factory and M (Mercantile), R-1 and R-2 to include Hotels, Resorts, Dormitories and Fraternity/Sorority Housing. These occupancies represent a majority of the locations where targeted violent events have occurred, and which have resulted in multiple deaths and injuries. Reference to a high occupancy building within this document does not presume that all buildings with an elevated risk for a targeted violent event are included within the ICC classifications listed. As such, the work group believes that building owners, designers, and code officials should review each

facility based on its own safety and security risks in order to make an informed decision whether to conduct a building safety and security assessment (BSSA).

Targeted violent events are human caused and committed with the intent to harm any or all occupants within a high occupancy or high-risk facility or within its property boundaries. Such events might include, but are not limited to, an active shooter, workplace violence, hate crimes, or terroristic activities, armed violence, bomb, chemical, or biological threats.

A Building Safety and Security Assessment (BSSA) is intended for the purpose of facilitating occupant safety and security, and generally refers to the evaluation and recommendation of countermeasures, including design layout, devices, equipment, and operational protocols that can inhibit targeted violent events, while possibly safeguarding occupants from the impacts of these events and hastening emergency first-response.

The Assessment Workgroup understands that there are multiple definitions for safety and security assessment of facilities among design officials, industry practitioners, and code agencies. This definition is offered as a reference for how the Assessment workgroup viewed, discussed, and deliberated on the process of BSSA with regard to the scope of the recommendations found in this report.

The terms safety and security used in this paper do not specifically refer to the body of existing fire and building codes, cyber related threats, or mitigation of the destruction of physical property or petty crimes, although it is acknowledged that these problems may also arise during a targeted violent event.

The **process of Building Safety and Security Assessment**, is the professional evaluation of safety and security risks, and identification of possible design countermeasures of those risks to occupants during a targeted violent event. The Assessment Workgroup defines the process in this report to distinguish it from safety and security assessment which may be performed by others using different parameters than envisioned in this report, or without requisite training and certification as being recommended by the Workgroup.

A first-responder includes all emergency personnel who as part of their profession, are required to respond to targeted violent events, including but not limited to, local fire departments, local or regional police, FBI, SWAT, Homeland Security, the National Guard, military, ATF, EMTs, and private security personnel.

Disclaimer: This document proposes an accreditation of a standardized and nationally recognized certification process for the BSSA Assessor. This document does not imply that any existing training or certification program currently meets or does not meet the criteria envisioned by the workgroup.

Body of Work Reviewed and Evaluated by the Committee

The ICC Assessment Workgroup reviewed reference material from multiple sources, including, but not limited to: NFPA, ASIS, FEMA, ASHRAE, CPTED, API, and BOMA. Refer to Appendix A for a list of references. While the Workgroup is not critical of the existing work products it reviewed, the group does not believe any single document, or set of cohesive documents from multiple sources currently exists that fully address the subject of occupant safety and security for targeted violent events. On one end of the spectrum, CPTED (Crime Prevention Through Environmental Design) provides very practical guidelines for designing safer facility environments that can help deter criminal activity such as petty crime, simple assaults, or property related crimes. While, CPTED does not appear to have been developed to address targeted violent events as defined in this document, some of its design principles involving surveillance and occupant/vehicle movement control, could also serve as countermeasures identified in a safety and security assessment. Conversely, FEMA offers design standards for hardening sensitive government facilities, but at a cost that typical building owners might not be able afford. What appears to be absent among many existing design and code resources, are practical safety and security design considerations that are specific to varying building functions, risks, and occupancy types, and that can be objectively assessed early in design.

The Workgroup finds....

that existing codes and related resources are associated with occupant life-safety as opposed to safety and security during targeted violent events. Security resources devoted to design appear to focus most on limiting petty crimes in the built environment, while active shooter resources focus mostly on planning, as well as command-and-control around the possibility of a violent event, such as an active shooting incident, might occur.

While the proposals in this document primarily focus on design of new facilities, it is the position of the Workgroup, that with the increasing number of targeted violent events occurring within the built environment, building owners need to be more proactive regarding building safety and security. Additionally, the workgroup has considered that building owners may be at an increased risk of civil litigation related to a lack of diligence to provide reasonable measures of safety and security to occupants of their facilities. For these reasons, the Workgroup believes that to provide requisite levels of safety and security to building occupants across a broader spectrum of the built environment, the need to perform a BSSA should be expanded to include existing facilities deemed to be at high risk for targeted violent events affecting multiple occupants.

The Workgroup recommends...

that in addition to a requirement to perform a BSSA in design of new high occupancy and high-risk facilities, a BSSA of most existing high occupancy and other buildings deemed at high risk for targeted violent events is also necessary.

The reference materials reviewed by the Workgroup and listed in Appendix A can be used to further develop and expand the concepts and proposals put forth in this paper. For example, NFPA, ASIS, and FEMA develop security design criteria that could be used as part of a BSSA. However, all resources researched by the workgroup can be treated as works in progress, as they have yet to capture the totality of risk assessment needed to improve occupant safety and hasten first response during a targeted violent event.

State Requirements for BSSA in Design of New Facilities

Currently, safety and security assessments during building design are not required by most state or local entities having jurisdiction. The State of Virginia, is one example where under state law, §22.1-140 (iii) (amended and approved March 15, 2019), there is a requirement that plans and specifications for a public-school building “*be reviewed by an individual or entity with professional expertise in building security and crime prevention through building design.*”

However, the Virginia law as written, does not define the standard of review, the credentials for those having professional expertise to perform a review, or which of the available resources should be used as criteria in a review. By law, these determinations appear to have been assigned to the Superintendent of Public Instruction in Virginia. However, and possibly due to the newness of the law, there were no State resources located by the Workgroup that indicated how the review should be conducted, or what expertise would be required to perform a review. Even though these resources were not available at the time of compiling this report, Virginia should be commended for being the first State to conclude that a security and crime prevention review during design of a specific type of building occupancy is necessary.

The Workgroup recommends....

that local jurisdictions should implement a requirement that all new planned construction of public or private high occupancy or high-risk facilities require a BSSA be performed during planning and design development.

a BSSA should be presented in written format, and/or as markups in a plan review presented to the principal in charge of the design team and to the primary owner of the proposed facility.

that a BSSA be performed by individuals who have received standardized training through an accredited program offering a certificate that acknowledges competence and experience of an Assessor to develop a BSSA.

Current State of the BSSA

There are many disparate resources currently available to building designers, owners, and facilities managers, which can assist them with building design features that may inhibit targeted violent events while enhancing occupant safety and first response. However, there also appears to be a void between the most basic and pragmatic design features that most facility designs would automatically include, and those which would add considerable cost for building owners to implement. There are three areas of concern that the Workgroup have identified from its research which pose challenges to current BSSA practices and procedures.

1. *The Workgroup is concerned...*

that there is no single recognized and respected source of information on BSSA techniques or solutions that fully address targeted violent events in the built environment.

When multiple sources of non-comprehensive and unvetted safety countermeasures are thrown together with a mixture of high emotion and a sense of urgency, building owners, facilities managers, and occupants sometimes take matters into their own hands. No matter how well-meaning these actions may be, these stakeholders can inadvertently increase the risk of making emergency situations worse for building occupants and first-responders. In fact, some countermeasures employed for the sake of increasing safety during a targeted violent event are not code compliant and can actually hinder occupant safety during non-violent emergencies, which are also much more common.

It has been reported that non-fire code compliant locking hardware has been installed in meeting rooms and classrooms, with intent to lock out suspected committers of a targeted violent event. In another example, after attending a run-hide-fight training program, an instructor tried to obtain roof access keys for the purpose of having a place of refuge for his students during an active shooting event. The workgroup also learned of non-code compliant building modifications, including the removal of audible fire alarms and other actions which were being initiated by occupants and building owners in an attempt to cope with the possibility of a targeted violent event. By encouraging or inadvertently eliciting human reactions that are contrary to those which should occur during a fire or seismic event, occupant risks can be exacerbated through ad hoc countermeasures that are non-code compliant.

The Workgroup recommends....

that the primary code-making agencies, local jurisdictions, and other stakeholders work together to produce a single uniform document, or set of cohesive documents of BSSA best practices to be considered in the design of all high occupancy or high-risk buildings, public or private.

and....

that reference materials reviewed by the workgroup and listed in Appendix A can be used to further develop and expand the concepts and proposals put forth in this paper. For example, NFPA, ASIS, and FEMA have developed security design criteria that could be used as part of a BSSA.

2. The Workgroup is concerned....

with the apparent contradiction that the assessment of safety and security during building planning and design development of high occupancy or high-risk buildings rarely involves first-responders for facilities within their jurisdictions.

While there exists a minute-by-minute written forensic account of nearly every contemporary targeted violent event in the built environment from a law enforcement perspective, there is scant information available to inform designers of the perceptions and interactions of first-responders to the built environment during such events. One comment received from a state fire marshal during the Workgroup's research, is that first-responders are trained to accept the built environment as-is, and to expect that job success, and likely their own survival, hinge on being adaptable in every situation. The Workgroup notes that the importance of adaptability of first-responders would not be lessened through their more intensive involvement in the facility planning process. However, the Workgroup concludes that there exists untapped potential to enhance building safety and security best practices, as well as to secure alternate perspectives during design development of high occupancy and high-risk facilities, should first-responders be more integrally involved.

It is important to note that the workgroup is not proposing that first-responders represent an additional code official or other type of authority having jurisdiction over building design outside of established enforceable codes. First-responders however, are stakeholders who appear to be rarely included in design development meetings of high occupancy or high-risk buildings. The workgroup suggests that first-responders are an important constituent in their jurisdictions, and that they should be extended similar input authority as other stakeholders involved in facility planning. First-responders should be considered a resource to building owners, designers, and to BSSA Assessors.

The Workgroup strongly advocates....

for involvement of law enforcement personnel and other first-responders in the development of a uniform set of building safety and security best practices that are tied to a BSSA, as well as involvement of first-responders during design development, as it pertains to building safety and security for high occupancy or high-risk facilities within their jurisdictions.

3. The Workgroup is concerned...

that there are conflicting safety and security recommendations for hardening of facilities.

Certain design and operational countermeasures that are intended to provide occupant safety, and to enhance first response, may also have unintended consequences in practice. Whether a safety proposal is to increase the use of glass for visibility in buildings, implementing lock-down strategies, the use of silent alarms, or enhancing occupant notification procedures, design teams face a myriad of safety and security choices that can also provide advantages to the committers of violent acts. A separate ICC workgroup is addressing the task of hardening buildings and site infrastructure against targeted violent events. However, all proposed design countermeasures should be thoroughly evaluated during design development, incorporating whenever possible, the input of the BSSA Assessor as well as first-responders.

The Workgroup recommends....

that a uniform list of potential safety and security countermeasures, concepts, and operational protocols be developed that can be utilized as the basis of design best practices and assessment during planning and design.

the Workgroup further believes that the ICC is in the best position to facilitate a coordinated effort among NFPA, ASIS, AIA, ASHRAE, BOMA, FEMA, and others in the development of standardized BSSA criteria.

Training for Assessors, Designers, Building Owners, Facility Managers, and First-responders

Many organizations offer training and education in areas that address building safety and security, including but not limited to ICC, NFPA, ASIS, AIA, ASHRAE, FEMA, BOMA, etc. As an example, ASIS provides training and professional certification for security practitioners such as the Certified Protection Professional (CPP) and Physical Security Professional (PSP).

The Workgroup recommends the following training requirements for each stakeholder group involved in design, ownership, and operation of high occupancy or high-risk facilities:

Assessors

The Workgroup recommends....

that a standardized training regimen be identified or developed for certifying a BSSA Assessor.

A certification, if offered by multiple agencies, including private or not for profit organizations, should require a minimum standardized set of learning outcomes, prerequisite professional experience, requirements for on the job experience, and a minimum required time investment

by a prospective trainee. While a nationally recognized training regimen should be able to be duplicated by multiple qualified agencies, an independent agency should provide oversight of the BSSA accreditation process to ensure standardization and equivalency of training programs leading to a BSSA certification.

The Workgroup regards....

the ICC as capable of facilitating a coordinated effort among NFPA, ASIS, AIA, ASHRAE, BOMA, FEMA and others in the identification or development of standardized and accredited training programs that offer professional BSSA Assessor certifications.

that in the short-term, the ICC could include language in the International Building Code that describes BSSA requirements and references nationally recognized certifications such as those offered by ASIS, or others.

Designers and Building Owners

The Workgroup recommends....

architects, engineers, consultants, and building owners should become at least minimally knowledgeable of occupant safety and security issues impacting building design and operations.

Minimal knowledge is defined as consisting of an implicit understanding that new buildings intended for high occupancies, or those considered to be high risk, should incorporate a BSSA during planning and design by a certified Assessor, and that the process of risk evaluation to occupants also involve first-responders.

Facility Managers

The Workgroup recommends....

that facility managers receive condensed training similar to that received by a certified BSSA Assessor.

Training should ensure an understanding of the purpose of a BSSA, as well as knowledge of the physical safety and security assets in the building that will fall under the maintenance and operational supervision of the facility manager. With such knowledge, facility managers can ensure that maintenance staff and occupants do not inadvertently defeat safety measures, or that staff fail to properly maintain safety and security countermeasures implemented in their facilities.

The Workgroup finds....

that facility managers have a responsibility to ensure proper maintenance of safety and security devices and equipment, and that safety and security operational protocols are fully understood.

Equipment and devices may include but are not limited to locking and access control hardware, firmware, and software; alarm systems including, fire, panic and blue-light systems; surveillance cameras and other IT systems related to safety and security. Operational protocols may include but are not limited to ASHER planning, personal alert systems, occupant egress, or refuge plans.

The Workgroup finds....

that facility managers and their staff have a responsibility to provide periodic site-specific orientation for first-responders of high occupancy or high-risk facilities under their purview.

Facility managers should utilize periodic onsite visits with first-responders to provide an overview of security devices; equipment and operational protocols, including access control sequencing, alarm locations and types of alarms; way-finding signage and room numbering schemes; mechanical, electrical, communications, and IT systems; types and time-of-day occupancies; standard and non-typical building functions; as well as unique facility characteristics or changes in floorplan and building layout.

First-Responders

The Assessment Workgroup recommends....

that first-responders, including fire, police, and other emergency personnel who would be required to respond to targeted violent events in high occupancy or high-risk facilities receive condensed training, similar to that received by a certified BSSA Assessor.

that first-responders become more proactively involved in safety and security assessment during planning and design development of high occupancy or high-risk buildings in their jurisdictions.

that first-responders periodically conduct onsite visits with appropriate facility management staff in high occupancy or high-risk facilities within their jurisdiction.

that first-responders attend training to assist them in understanding how building designs are communicated through construction documents.

An onsite review should include security devices and equipment, as well as operational protocols that include but are not limited to: automated access control; locations and types of alarms; way-finding signage and room numbering schemes; mechanical, electrical,

communications, and IT systems; time-of-day occupancy patterns; standard and special building functions as well as unique facility characteristics or changes in floorplan and building layout.

A better understanding of construction documents will assist first-responders by providing them with the basic knowledge of the order in which construction documents are organized; how to locate specific rooms by function or room number; location and basic operations of utility infrastructure systems such as power, water, communications, and IT; and, building occupant conveyance systems such as elevators, escalators, and moving walkways, foyers, atriums, and stairs.

On-site orientation will improve first-responders' understanding of building layouts, mechanical operations, occupancy patterns, as well as safety and security devices, equipment, and protocols. First-responder facility orientation will also assist in their ability to participate in design reviews as well as active first-response by equipping them with basic facilities knowledge and improved ability to speak the language of design and facility management professionals.

A Summary of Findings and Recommendations of the Assessment Workgroup

- 1. Local jurisdictions should require a BSSA for new and existing high occupancy and other high-risk buildings. A BSSA should evaluate and identify occupant risks during a targeted violent event and recommend design countermeasures and operational protocols aimed at mitigating those risks.***
- 2. Building owners should apprise themselves of their liability and litigation risks for failure to provide a reasonable level of safety and security to their building occupants should a targeted violent event occur.***
- 3. If a BSSA is not required by code for existing high occupancy or high-risk buildings within a jurisdiction, owners and facility managers should consider the benefits of conducting a BSSA for their existing facilities.***
- 4. Those who perform a BSSA should be professionally trained and certified to perform this work. An independent agency should take responsibility for establishing uniform certification requirements for Assessors and act to convey accreditation to agencies or organizations wishing to offer an official BSSA Assessor certification.***
- 5. A single definitive document should be developed to provide best-practices for providing building safety and security, as well as objective and qualitative evaluations of countermeasures that might be employed to increase building safety and security during a targeted violent event. Such an initiative should involve a comprehensive group of industry stakeholders including NFPA, ASIS, AIA, ASHRAE, BOMA, FEMA, and other related groups.***

- 6. Building owners, facility managers, and members of design teams should receive condensed training regarding BSSA objectives and countermeasures implemented as a part of a building system or as an operational protocol. Training on these systems should be treated with the same level of importance as the proper function, operation, and maintenance of any other major building system.**
- 7. First-responders should receive condensed training on BSSA objectives and countermeasures that are implemented as a building system or as an operational protocol for high occupancy or high-risk buildings within their jurisdictions.**
- 8. First-responders should be integrated within the planning and design teams for their input regarding high occupancy or high-risk buildings in their jurisdictions.**
- 9. First-responders should receive remedial training in understanding design and construction documents used by the industry to communicate building design and construction criteria, and with specific attention to an ability to review and comprehend floorplans, site plans, mechanical, electrical and IT systems drawings.**
- 10. First-responders and facility managers should meet periodically, but not less than annually, on site of high occupancy or high-risk facilities within their jurisdictions to orient themselves with building specifics, including safety and security systems and countermeasures, as well as general building layout, wayfinding signage, and locations of critical facility infrastructure.**