G88-25

IBC: [A] 101.3 (New), SECTION 429 (New), 429.1 (New), 429.2 (New), 429.2.1 (New), 429.2.2 (New), 429.3 (New), 429.3.1 (New), 429.4 (New), 429.5 (New), ASTM Chapter 35 (New)

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2024 International Building Code

Revise as follows:

[A] 101.3 Purpose. The purpose of this code is to establish the minimum requirements to provide a reasonable level of safety, health and general welfare through structural strength, means of <u>ingress and</u> egress, stability, sanitation, light and *ventilation*, energy conservation, and for providing a reasonable level of life safety and property protection from the hazards of fire, *explosion* or *dangerous* conditions, and to provide a reasonable level of safety to fire fighters and emergency responders during emergency operations.

Add new text as follows:

SECTION 429 EDUCATIONAL OCCUPANCIES - FORCED ENTRY RESISTANCE

429.1 General. All Group E occupancies with an occupant load of 50 or more shall comply with Sections 429.2 through 429.5.

Exceptions:

- 1. Group E day care facilities.
- 2. Group E occupancies accessory to places of religious worship.

429.2 Main Entrances. Main entrances shall be constructed and designed to provide those inside the building with a view to areas where pedestrians and vehicles approach the entrance.

429.2.1 Windows, doors, sidelights and other glazed areas. Windows, doors, and sidelights in main entrances within the scope of Section 429.2 shall be rated assemblies in accordance with ASTM F3561-23. Other glazed areas in the main entrance with an exposed area equal to or greater than 5 square feet (0.46 m²) and a bottom edge less than 72 inches (1828.8 mm) above the finished ground level shall be rated assemblies in accordance with ASTM F3561-23.

<u>429.2.2</u> Ground floor windows, doors and sidelights in exterior walls. If warranted by a registered design professional's assessment of forced entry risk, ground floor windows, doors and sidelights in exterior walls shall be rated assemblies in accordance with ASTM F3561-23.

429.3 Classrooms. Interior classroom windows and doors shall be designed and constructed to provide a view from the classroom into corridor or other areas used to approach the classroom.

429.3.1 Interior classroom windows, doors and sidelights. If warranted by a registered design professional's assessment of forced entry risk, interior classroom windows, doors and sidelights shall be rated assemblies in accordance with ASTM F3561-23.

429.4 Locking arrangements. Locking arrangements in doors shall comply with applicable provisions of Section 1010.2.7.

429.5 Fire safety, evacuation and lockdowns. Fire safety, evacuation and lockdown plans shall comply with applicable provisions of Sections 401.2 and 404 of the International Fire Code.

ASTM International 100 Barr Harbor Drive, P.O. Box C700 West Conshohocken, PA 19428 <u>F3561-23</u> <u>Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active</u> <u>Shooter Attack</u>

Staff Analysis: A review of the standard proposed for inclusion in the code, ASTM F3561-23 Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack, with regard to some of the key ICC criteria for referenced standards (Section 4.6 of CP#28) will be posted on the ICC website on or before April 1, 2025.

Reason: Proposed change to Section 101.3

An issue surfaced when the new Chapter 4 sections regarding forced entry resistance in E-occupancies was vetted. Is IBC Section 101.3 broad enough to include "ingress?" On the one hand, since "egress" is expressly included in Section 101.3, one might reasonably conclude that "ingress" is also impliedly included since a building cannot be exited unless it is first entered. On the other hand, one might reasonably conclude that for something to be within the purpose of the Code, it should be express, not implied. Since both interpretations appear reasonable, this proposed change to Section 101.3 is meant to allow the Technical Committee to address the issue.

The following may be helpful. A few years ago, in response to the many times that armed shooters have forced entry into occupied buildings, the ICC Board of Directors established the Ad Hoc Committee on Building Safety and Security ("Committee"). The Board tasked the Committee to "comprehensively explore and assess building safety and security."

In creating the Committee, the ICC Board understood that building safety not only includes their means of egress systems, but also their means of ingress. The Committee also understood that. In its final report, at p.3, the Committee concluded that, "Building safety and security is of the utmost importance. The design, layout and building features in both new and existing buildings can have an impact on both safety and security during targeted violent acts."

Whether the Committee concludes that "ingress" is already impliedly included in Section 101.3 - or - the term "ingress" should be added, it is clear that the life safety and security of building occupants depends both on properly constructed means of ingress and egress.

We urge you to support this proposal.

Proposed Addition of Section 429

This proposal is meant to provide school designers with a powerful new tool to assist them in making school occupants safer from active shooters. A new standard, namely, *ASTM F3561-23 (Standard Test Method for Forced-Entry Resistance of Fenestration Systems After Simulated Active Shooter Attack)* was specifically developed to enable school designs to incorporate building materials into ingress areas that have been tested and rated to resist forced entry by an active shooter.

The Scope of ASTM F3561, Section 1.1, explains the justification for its adoption by the IBC: "This test method sets forth the requirements and testing procedures to test forced-entry-resistant building components, construction components, and specialty security equipment. This test method is intended primarily for manufacturers to test and rate their windows, doors, modular panels, glazings, and similar products to ensure that all manufactured products meet the necessary requirements for forced-entry protection after sustaining an active shooter assault."

ASTM F3561 provides an objectively repeatable way to measure and assess whether the building components and assemblies used in a means of ingress area are, or are not, capable of resisting forced-entry attempts by an armed intruder. ASTM F3561 provides eight (8) increasingly difficult levels of testing forced-entry resistant building assemblies. This permits designers (i) to select the level of ASTM F3561 protection most appropriate for the risk associated with a particular means of ingress area and (ii) to ensure that the ingress area is constructed using materials rated to achieve that level of intruder resistance.

If adopted, the proposal would require applicable schools to construct main entrance areas so that those inside the school can see students and vehicles, including potential intruders, approaching the entrance. Additionally, it would require the windows, doors and sidelights in the main entrance to be constructed using rated assemblies, tested to ensure compliance with one of the eight levels of entry resistance established by ASTM F3561. It would also require glazed areas used in vestibule and other main entrance areas with an exposed area equal to or greater than 5 square feet and a bottom edge 72 inches or less above the finished ground level to be constructed using ASTM F3561 rated assemblies. (The square footage for required ASTM F3561 protection was borrowed from the size of the Code's emergency escape and rescue openings. *See*, IBC Section 1031.3.1. Seventy-two inches above grade was selected as a height beyond the reach of armed intruders, effectively exempting transoms and other out of reach areas of glazing from the additional cost associated with ASTM F3561 compliance.)

Beyond the main entrance area, the proposal also addresses classrooms and other potential ground floor ingress areas in exterior walls.

As in the case of main entrances, interior classroom doors and windows would be required to have a view from the classroom to corridor areas used to approach the classroom. Additionally, if warranted by a Registered Design Professional's assessment of forced entry risk, interior classroom window, door and sidelight assemblies would be required to be rated in accordance with ASTM F3561. Likewise, if warranted by a Registered Design Professional's assessment of forced entry risk, windows, doors and sidelights in ground floor exterior walls outside the main entrance would require assemblies rated in accordance with ASTM F3561.

According to the Federal Bureau of Investigation, the mean police response time to an active school shooter is about three (3) minutes. Lives can quickly be lost inside the building unless an active shooter's entry into the building can be stopped or delayed until the police arrive. We now have a consensus standard that, when judiciously used to design and construct the means of building ingress, can reliably slow or stop active shooters from entering our schools and their classrooms until the police arrive.

We urge your support for these proposals.

Bibliography: Proposed change to Section 103.1

Ad Hoc Committee on Building Safety and Security, Building Safety and Security Report, International Code Council, Inc. copyright 2022.

Proposed Addition of Section 429

Sandy Hook Promise, 17 Facts About Gun Violence and School Shootings, https://www.sandyhookpromise.org/glog/gun-violence/factsabout-gun-violence-and-school-shootings/.

Education Week, *School Shootings in 2023: How Many and Where*, January 6, 2023, <u>https://www.edweek.org/leadership/schools-shootings-this-year-how-many-andwhere/2023/01</u>.

FBI Law Enforcement Bulletin, *Police Response Time to Active Shooter Attacks*, https://leb.fbi,gov.image-repository/police-response-time-to-active-shooter-attacks.jpg/view.

Cost Impact: Increase

Estimated Immediate Cost Impact:

Proposed Change to Section 101.3

The proposed change to Section 101.3 is a clarification and has no cost impact on the cost of construction.

Proposed addition of Section 429

The cost of ASTM F3561 compliant assemblies in exterior building areas is approximately 41% more than the cost of assemblies compliant with current code. For an 850 sq. ft. main entrance area, this would be a \$113,959 increase based on average cost (see cost justification). However, in a 105,000 sq. ft. school with 1,500 students, this cost of ASTM F3561 compliance would add less than 0.4% to the total construction cost of the school.

Estimated Immediate Cost Impact Justification (methodology and variables):

The infrastructure to manufacture the framing and most other components needed to construct entrance door and window assemblies for building ingress is already in place. It is modified to accommodate the varying sizes, thicknesses, weights, and energy requirements necessary for the manufacture of different types of products, for example, standard, hurricane resistant, fire rated or bullet resistant assemblies. The cost to manufacture, assemble and install means of ingress assemblies tested to ASTM F3561 in exterior building applications is comparable to the cost to produce and install tested hurricane resistant assemblies in exterior applications. Publicly available data indicates that the cost of these hurricane resistant assemblies are approximately 41% more than the cost of standard (non-hurricane resistant) assemblies. *See*, Architectural Digest, *How Much Do Hurricane Windows Cost? (2024 Guide)*, https://www.architecturaldigest.com/reviews/windows/hurricane-windows-cost; Architectural Digest, *How Much Does Window*

Replacement Cost? (2024), https://www.architecturaldigest.com/reviews/windows/windows/window-replacement-cost; Forbes, How Much Does Window Replacement Cost in 2024?, https://www.forbes.com/home-improvement/windows/window-replacement-cost/,

Two significant variables are:

(1) Registered Design Professional Assessments of Risk. The cost of incorporating this proposal into the construction costs of a school will depend on the total number of ground floor ingress areas the school building has and the total number of ingress areas that are determined to be at risk of armed intruder access. As the number of ground floor ingress areas are determined by a Registered Design Professional to warrant protection increases, the cost of construction will likely increase.

(2) The specific location of the school. This is an important variable since it will likely affect the total square foot cost of construction, and the total square foot size of the school which will increase as the student population of the school increases. Construction costs depend on location. Those in the Eastern and Western United States are the highest, while those in the South are the lowest, and those in the Midwest are in the middle. However, school size varies with the size of its student population, which will likely be larger in urban areas and smaller in rural, areas. The recommended square footage required per student is 59 sq. ft. for kindergarten through grade 6 and 80 sq. ft. for grades 7 and 8. **See**. CA Department of Education Sacramento, *Guide to School Site Analysis and Development* (2000 ed.), https://www.cde.ca.gov/ls/fa/sf/guideschoolsite.asp#:text=Greenee%20School%20Facilities%20Act%20of.for%20grades%20seven%20e

The average cost to build a school in the U.S. is currently \$327 per sq. ft. **See**, ProEst, *Commercial Construction Costs Per Square Foot*, https::/proest.com/construction/cost-estimates/commercial-costs-per-square-foot/

Cost Justification: If the main entrance to a school is 850 sq. ft., its average costs of construction to current code is estimated to be \$277,950. This proposal would increase that cost by 41% or \$113,959. However, if that school has1,500 students and a total of 105,000 sq. ft., the additional cost of ASTM F3561 compliance for the main entrance area would be **less than 0.4%** of the total \$34,446,180 cost to construct the school.