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**THURSDAY**

QUENCH YOUR THIRST FOR **TECHNICAL KNOW-HOW**

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# Fenestration Assemblies for School Building Security



**Thom Zaremba**  
NGA Code Consultant  
Roetzel & Andress



**Lisa Winckler**  
International Window Film  
Association



**Urmilla Sowell**  
VP, Advocacy & Technical Services  
National Glass Association

## NGA UPCOMING EVENTS

**NGA Glass Conference: Ann Arbor**  
Sept 29- Oct 2, 2025

**GlassBuild America**  
Nov 4-6, 2025

A young child with curly hair is looking out a window, smiling. The child is wearing a light-colored polo shirt. The window has a blue tint, and the text 'Windows and doors respond first.' is overlaid on the left side of the image.

# Windows and doors respond first.

The NGA is prioritizing making schools safer with forced-entry-resistant, security, and ballistic windows and doors.

Get involved



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# NGA's activities

- Glass Technical Papers & Manuals
  - *FB71-24 School Security Glazing*
  - *FB43-14(2019) Security Glazing*
  - *Laminated Glazing Reference Manual*
  - *Protective Glazing Manual*
- Thirsty Thursday Webinars ([on-demand](#))
  - *School Safety with Security Glazing*
  - *The Glazing Industry's Impact on the Active Shooter Standard*
- Legislative One-Pagers
  - *School Security: Windows Respond First*

- Glass Magazine Articles
  - *An Industry of "First Responders"* by Katy Devlin
- ASTM
  - NGA's School Security Task Group involvement in ASTM F3561: *Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack*
  - New ASTM work item: *ASTM WK93371 New Test Methods for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack of Glazing for Retrofit*
- AIA Presentation
  - *Security Glazing for Schools*

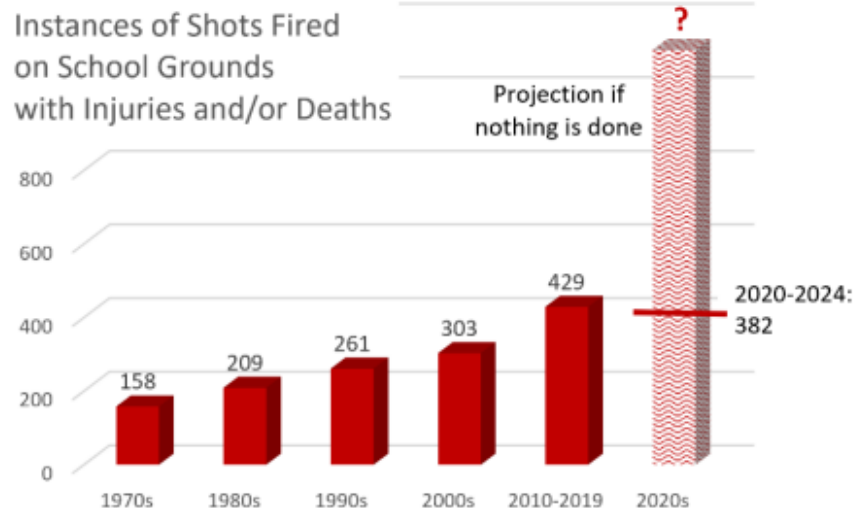
## School Security: Windows and Doors Respond First

### The request:

Support **H.R. 887: Securing Our Students Act** and **H.R. 2491/S. 1107: Securing Aid for Every School Act, (SAFE School Act)** allocating funds for school safety and security. The glass industry is prepared to make schools safer with security windows and doors.

### The issue:

**Active shooter events are becoming more frequent.**



### Time is critical.

The average length of active shooter events is 8 minutes; the

### The strategy:

**Make schools safer with security, ballistic, and attack resistant windows and doors.**

In active shooter events, windows and doors can be the first line of defense. Security glazing resistant to forced entry can be used to slow down an attacker, allowing more time for schools to enact emergency plans and for first responders to arrive.

High risk areas of school buildings include entrance areas, exterior window and door access points, and classroom window and door access points.

### Third-party tested products are available.

ASTM F3561 *Standard Test Method for Forced-Entry-Resistance of Systems after Simulated Active Shooter Attack* serves as the industry-accepted standard for minimum criteria for security windows and doors for schools.



**Time is critical.**

The average length of active shooter events is 8 minutes; the shortest is 90 seconds. Response times for first responders average 3 minutes, so some active shooter events are over even before first responders arrive.

**No building codes or mandates for school security exist.**

In comparison, every building is subject to fire codes and regulations because of (relatively smaller numbers of) historic deaths in building fires. Since the adoption and enforcement of the fire codes, the number of deaths from fires has dramatically decreased.



National Glass Association (NGA) combined with the Glass Association of North America (GANA) in 2018 to create the largest trade association serving our industry. We develop standards, create technical resources, promote and advocate for glass in the built environment, and advance the industry as a viable, thriving and exciting career path. Learn more at [glass.org/advocacy](https://glass.org/advocacy). For further information on windows and doors for school security, please email NGA Technical Staff at [technicalsvcs@glass.org](mailto:technicalsvcs@glass.org).

criteria for security windows and doors for schools.

**Window and door solutions:**

- Serve as first lines of defense while allowing school personnel and first responders to see impending danger.
- Provide privacy and allow diffuse light in while selectively blocking attacker's line-of-sight when translucent or reflective glass is utilized.
- Can be designed for forced entry resistance and bullet-resistance.
- Are available at various protection levels as retrofit options.
- Create a secure environment for teachers and students without imposing visible barriers.
- Provide passive protection, even during power outages.

***Glass can be part of the school's security plan as the "first element of surprise."***

**References:**

- ASTM F3561 *Standard Test Method for Forced-Entry-Resistance of Systems after Simulated Active Shooter Attack*. [astm.org](https://www.astm.org)
- <https://everytownresearch.org/maps/gunfire-on-school-grounds/>
- First responders' average response time: <https://leb.fbi.gov/image-repository/police-response-time-to-active-shooter-attacks.jpg/view>
- FEMA Primer to Design Safe School Projects in Case of Terrorist Attacks and School Shootings (December 2012): [https://www.dhs.gov/xlibrary/assets/st/bips07\\_428\\_schools.pdf](https://www.dhs.gov/xlibrary/assets/st/bips07_428_schools.pdf)

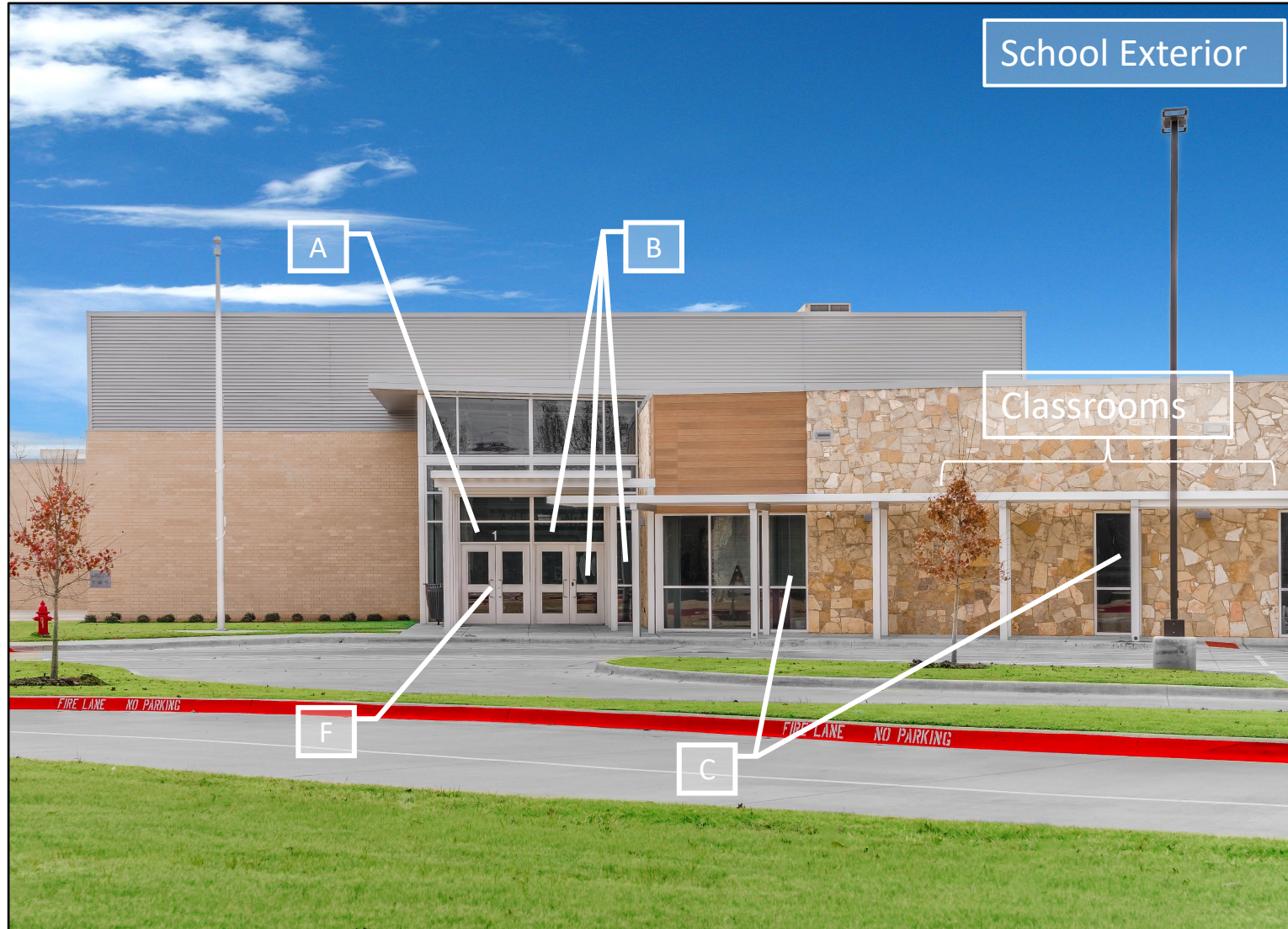
# School Security Building Code Proposal

Thom Zaremba

NGA Code Consultant

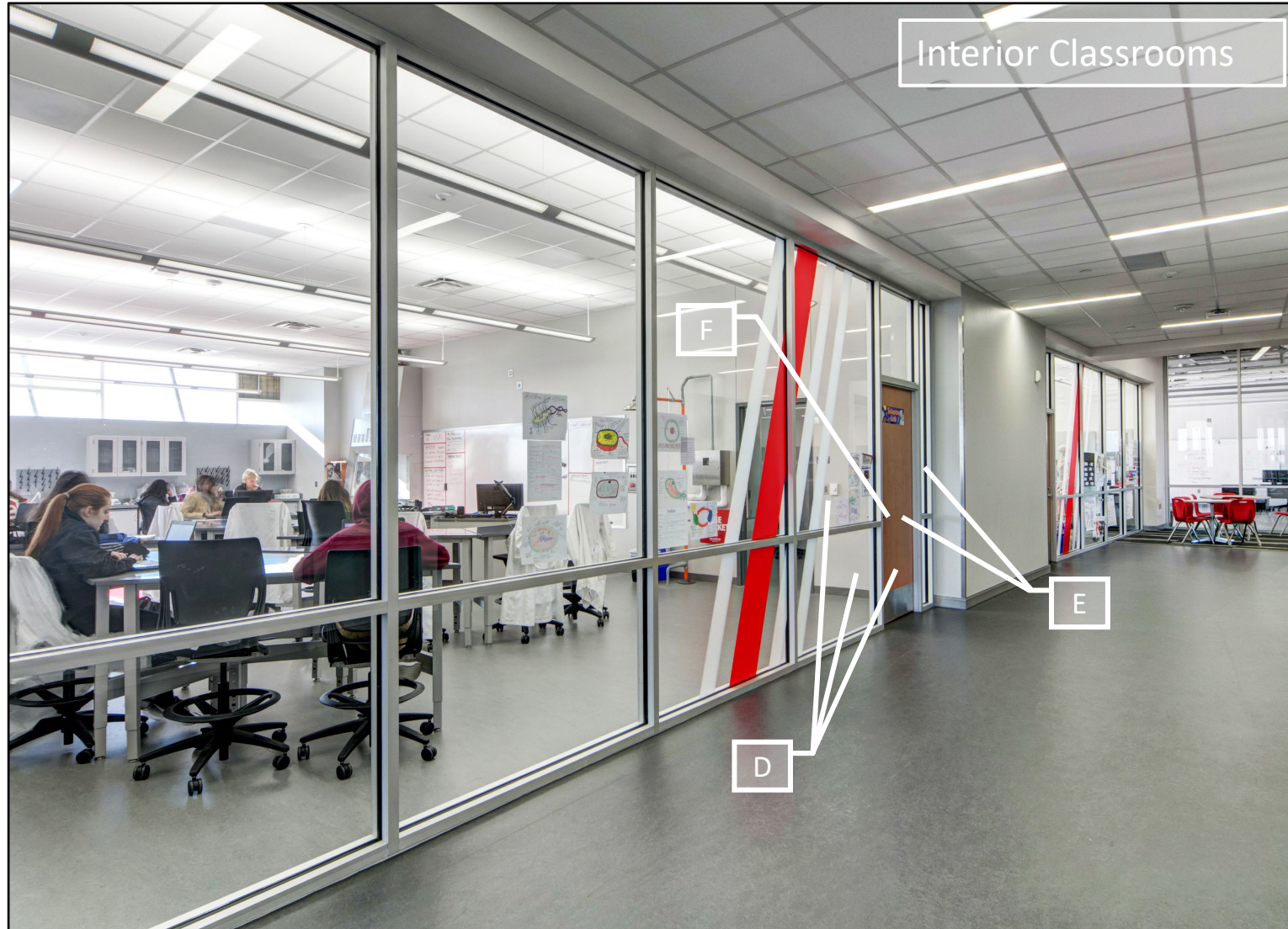
Roetzel & Andress





- A. Main entrances.** View to pedestrian and vehicle areas.
- B. Main entrances.** Rated in accordance with ASTM F3561-23.
- C. Exterior walls.** Rated in accordance with ASTM F3561-23.
- D. Interior walls.** View into corridor/areas approaching classroom.
- E. Interior walls.** Rated in accordance with ASTM F3561-23.
- F. Doors.** Locking to comply with Section 1010.2.7.
- G. Emergency plans.** Comply with Sections 401.2 and 404 of the *International Fire Code*.





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- F. Doors.** Locking to comply with Section 1010.2.7.
- G. Emergency plans.** Comply with Sections 401.2 and 404 of the *International Fire Code*.

# **Proposal G88-25**

Submitted by:

National Glass Association

&

Glazing Industry Code Committee

# Section 305.1 of the International Building Code defines an Educational Occupancy as:

## 305.1 Educational Group E. INSIGHTS

Educational Group E occupancy includes, among others, the use of a *building* or *structure*, or a portion thereof, by six or more *persons* at any one time for educational purposes through the 12th grade.

- G88-25 would create a new section 429 in Chapter 4 of the International Building Code.
- G88 would apply to *Educational Occupancies* but only those having an *occupancy load* of 50 or more.
- G88 would *not* apply to *day care facilities* or those accessory to a *place of worship*.

**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.

- G88 protects THREE parts of the school building –
  - Main Entrances,
  - Door and Window Access Areas in Exterior Walls, and
  - Classrooms.
- These areas are PROTECTED from FORCED ENTRY by using materials tested to a new test standard: ASTM F3561-23 “Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack.”
  - This Standard requires door, window and other glazed assemblies to be tested by firing multiple bullets into them, followed by striking them with an impactor using various levels of force.



# Main Entrances

MAIN ENTRANCES must have a VIEW to areas approaching the entrance:

**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.

Windows, doors and sidelights in MAIN ENTRANCES and ANY other glazed areas in the MAIN ENTRANCE that is accessible from ground level MUST be protected from forced entry

**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 ( $0.46 \text{ m}^2$ ) 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.

ALL Ground floor ENTRANCE areas in exterior walls MUST be protected IF warranted by the risk assessment of a REGISTERED DESIGN PROFESSIONAL.

**429.2.2 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.

# Registered Design Professional

## The International Building Code DEFINES a REGISTERED DESIGN PROFESSIONAL:

**[A] REGISTERED DESIGN PROFESSIONAL.** An individual who is registered or licensed to practice their respective design profession as defined by the statutory requirements of the professional registration laws of the state or *jurisdiction* in which the project is to be constructed.

**[A] REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE.** A *registered design professional* engaged by the owner or the owner's authorized agent to review and coordinate certain aspects of the project, as determined by the *building official*, for compatibility with the design of the building or *structure*, including submittal documents prepared by others, *deferred submittal* documents and phased submittal documents.

# Interior Classrooms

INTERIOR CLASSROOM windows and doors must have a view from the classrooms into other areas that approach the classrooms.

**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.

Interior windows, doors and sidelights **MUST** be protected IF warranted by the risk assessment of a **REGISTERED DESIGN PROFESSIONAL**.

**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.

Locking arrangements for entrance and classroom doors MUST comply with *International Building Code* Section 1010.2.7.

Fire Safety Evacuation and Lockdowns in schools MUST comply with Sections 401.2 and 404 of the *International Fire Code*.

**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*.



# The role of surface applied film in school security

Lisa Winckler

Technical Consultant

International Window Film Association



# IWFA Position on Ballistic Claims

- Recently, the National Glass Association working with ASTM helped develop a new test standard, known as ASTM F3561-22, for evaluation of forced-entry-resistance of fenestration systems after a simulated ballistic attack. This standard tests full OEM assemblies for windows and doors. The ASTM F3561-22 test method was not designed to evaluate retrofit building window film that would be applied to existing door/entry or window glass. The differences in glass type, thickness, framing, locking mechanisms, and structural components makes this standard not applicable for retrofit solutions. Using this standard in a bid specification or submittal is not appropriate and likely misleading.
- iwfa.com

The International Window Film Association (IWFA) has the utmost concern about any written specification or recommendation that would call for the use of any type of window film, such as a safety or security film, as a primary component of a “bullet-resistant glazing”. Safety/security films are being used *in conjunction with* various designed and tested bullet resistance glazings, but primarily as a “spall shield” to reduce the “spalling” off of small fragments of the glazings on the interior side in the event of being penetrated by ballistics.

Our industry believes there are adequate and acceptable standards and methods for testing of products as protection against ballistics. Since window films are an addition to a glazing and not intended for use as the glazing itself, we firmly believe that an individual glazing should be tested both with and without film installed on it for any comparison of improvement in total performance. In some cases, we have seen demonstrations or claims that the use of film imparted some bullet resistant value when, in fact, the glazing itself without film had almost those same bullet resistant qualities. Extreme caution should be taken, however, to make sure that any claims about performance due to the addition of a film layer clearly state the specifics of the glazing itself as supplied by the glazing manufacturer, the specifics of the film itself as supplied by the film manufacturer, and all relevant specifics of the ballistics used and the conditions of the test. Any attempt to imply performance due to the application of the film under any other conditions (different manufacturer, different glazing, different ballistics, different conditions), we believe, would be irresponsible as the margin for error could be one of life safety.

## BALLISTIC RESISTANCE

“Ballistic Resistance”

“Bullet Resistance”

“Bulletproof”

Below, you will find the International Window Film Association's statement on Ballistic Resistance. To this date, the IWFA is unaware of any films that have Ballistic properties.

[IWFA Statement On Ballistics and Bullet Resistance](#)

# Topics

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Various state laws and current situation

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Retrofit issues and applications

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Using Safety and Security  
Window Film for delayed entry

# Language from various state laws - Texas

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- TX – Texas law was enacted on 05/26/2023. It was an expansive set of actions both for existing schools and new schools.
- Must be implemented during the 2022-2023 school year and thereafter. Provisional certification clause expired on 08/31/2024. Annual audits.
- We estimate that over 95% of schools have been updated.
- All exterior doors shall: be constructed, both the door and door frame and their components, of material and in a manner that make them resistant to entry by intruders. Unless inside and exterior secured area, doors constructed of glass or containing glass shall be constructed or modified such that the glass cannot be easily broken and allow an intruder to open or otherwise enter through the door (for example, using forced entry-resistant film);
- Includes windows adjacent to an exterior door and ground-level windows near exterior doors.

# Language from Missouri, and Tennessee

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- Missouri – Definition of security window film: “Bullet-resistant window film”: glass, plastic film, or other synthetic substance applied to existing glass that can withstand the minimum standard for forced entry resistance as determined by the United States Department of State Certification Standard SD-STD.01.01, Revision G, or its successor standard.
- TN – all school buildings constructed or remodeled after July 1, 2023.
- 49-6-818 (a2) Have installed a clear, bullet-resistant or entry resistant film on the glass panel of each exterior entry or basement level window and door to prevent individuals from entering the school building ...by breaking the glass in such openings. (Paraphrased.)

# Retrofit issues and applications

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- Language matters
  - Window Film
  - Safety/Security Window Film
  - Window film or security composites – new technology
  - Safety/Security window film attachment systems
- Variables
  - Glass thickness, glass type, frame type, glass bite, gasket type, window type, window size, age, building location.
- Testing and demonstrations
  - ASTM WK93371 Forced Entry Resistance After Simulated Active Shooter Attack of Glazing for Retrofit.

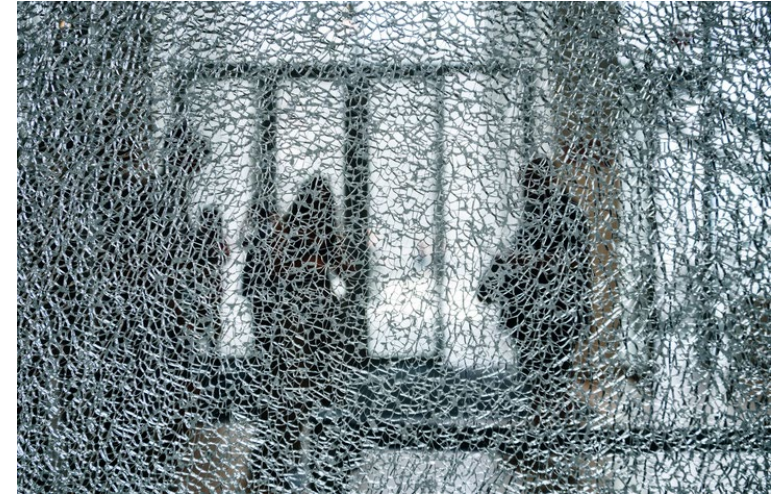




# The role of surface applied films

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- In an active shooter situation time matters. Safety and Security film can help buy valuable time to alert resources and implement lock down strategies.
- Safety and Security film helps hold shattered glass in place to delay entry time especially when used in conjunction with an attachment system. Attachment systems are strongly recommended for best performance.
- Safety and Security film comes in clear, translucent, and solar control versions which can help hide certain areas from view or improve daytime visual security from the interior of the buildings helping interior resources see out while helping to shield views into the building.
- Depending on the design of an existing building, safety and security film can help provide another layer to the existing barriers available.
- It may be cost prohibitive for a building to change out all of the glazing at one time. Safety and Security Film on non-operable windows or windows less likely to be attacked is another option.



# Frequently Asked Questions



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