Partner Alliance for Safer Schools

WHITE PAPER: Compartmentalization for Life Safety – The Role of Fire Doors and Secured Access During Crisis Events

The volunteers who make up the Partnership Alliance for Safer Schools (PASS) bring together their research and expertise from the education, public safety, and industry communities to develop and support a coordinated approach to make effective use of proven security practices for schools. The PASS team is also dedicated to developing white papers on specific, school-safety topics.

The content in these white papers may point to specific products, brands, or organizations as illustrations of how certain safety and security measures are implemented. PASS does not endorse specific products or brands. Together, the volunteers and partners of the PASS share a single vision: Making all schools safer is both achievable and urgently needed.

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KEY TOPIC

Using Compartmentalization Doors for Both Fire and Security Response in Schools

PROBLEM SOLVED

This white paper addresses how schools can effectively utilize fire-rated and compartmentalization doors to both contain threats (such as fire or active assailants) and maintain safe, code-compliant egress, while ensuring emergency responder access, minimizing misuse, and aligning with safety and security design standards.

RELEVANT PASS GUIDELINE SECTIONS

Classroom/Interior Perimeter Layer

- Policies and Procedures Component
- People (Roles and Training) Component
- Architectural Component
- Communication Component

- Access Control Component
- Detection and Alarm Component

MOST RELEVANT FOR

- School Administrators and Safety Officers
- Facility Managers and Maintenance Personnel
- Design Professionals (Architects, Engineers, and Security Consultants)
- Hardware Suppliers and Integrators
- Authorities Having Jurisdiction (AHJ)

TIME TO READ

Approximately 15 minutes

The Partner Alliance for Safer Schools (PASS) unites education, public safety, and industry expertise to promote proven security practices for K–12 schools. This white paper, developed by PASS volunteers, provides guidance on the use of compartmentation, through fire-rated doors and secured access points, as a life-saving strategy in both fire and active assailant events.

PASS advocates a layered, non-product-specific security approach adaptable to local threat assessments and resources. While many compartmentation features were originally designed for fire protection, they can also play a critical role in security by limiting assailant movement, supporting lockdown procedures, and protecting escape routes. This white paper offers detailed strategies, practical recommendations, and policy considerations to help school leaders, facility professionals, and design teams create safe, code-compliant environments that support both containment and emergency responder access.

I. Introduction

In both fire emergencies and active assailant events, swift threat containment is crucial for saving lives and minimizing destruction. Although the nature of these threats differs, one being a chemical reaction (fire) and the other involving human violence, the architectural and operational strategies for managing both rely on one key principle: compartmentation.

Compartmentation is a term commonly used in building codes and fire protection standards. It refers to the creation of protected areas, or compartments, within a structure using walls, doors, and other barriers designed to resist the spread of fire and smoke. This paper examines how fire doors, which are intended to contain flames and smoke during a structural fire, might also be utilized to secure areas during an active assailant event. In many cases, the same types of doors can serve both purposes effectively. When using fire doors for security, they can serve dual purposes. However, ensuring the building's security may necessitate more doors than the minimum openings outlined in the building, fire, and smoke codes.

Both situations rely on isolating the danger, buying time for emergency responders, and protecting occupants in adjacent areas. However, this strategy presents a significant challenge: ensuring timely and controlled access for emergency responders, particularly when these interior doors are locked or secured.

Safe building design is rooted in a layered defense, a blend of structural features, human protocols, and electronic and mechanical systems. Fire doors and secure-access points are physical embodiments of this philosophy, allowing a dynamic response to evolving threats. Understanding the strategic and functional similarities between these tools, as well as their implications for emergency response, is crucial for developing effective, integrated emergency plans that function well in real-world conditions.

II. Doors Typically Used for Compartmentation of a Building

Modern buildings utilize various types of doors to create compartments within spaces, providing barriers that protect both occupants and property. While these doors are primarily installed for fire protection, they can also be crucial in scenarios involving active assailants or security threats. Additionally, these doors serve to separate public areas, such as gyms and auditoriums, from nonpublic spaces like classroom wings, especially after hours.

Common examples include:

- **Cross-Corridor Doors:**
  These doors divide long hallways or large open spaces into smaller, manageable zones. In a fire, cross-corridor doors that are held open close automatically to prevent the spread of smoke and flames. In the event of a security breach, these doors can also serve as barriers to limit an assailant’s movement.

- **Stairwell Doors:**
  Located at stairwells, these doors are designed to protect vertical egress routes from smoke and

fire. In a security situation, stairwell doors can be used to isolate threats between floors, controlling access and providing protected escape routes.

- **Area or Unit Separation Doors:**
  Common in larger buildings, area separation doors partition spaces such as classrooms, office wings, or departments. These doors can compartmentalize a structure both for fire and security, allowing staff and responders to isolate threats within defined sections.

- **Smoke Barrier and Smoke Partition Doors:**
  Similar to fire doors, these doors create smoke-resistant boundaries that protect areas of refuge and limit the spread of hazardous conditions. In an active assailant event, they can also slow or deter access to certain areas.

Each of these doors is intentionally designed and placed to protect lives and property. In the context of a fire, their automatic closure and latching features help contain flames, smoke, and toxic gases. In a security context, those same characteristics can aid in creating temporary barriers that delay an assailant's movement, allowing time for occupants to shelter in place and emergency responders to neutralize the threat.

These doors are also usually required for egress, which often leads to a conflict between security and life safety. It's important to carefully consider this conflict when selecting products and applications that can meet both needs, whenever possible. While some doors can be locked from the non-egress side without hindering egress, others cannot be locked in this way.

For instance, schools with pod-style layouts, where classrooms or small learning communities surround a shared common space, often use double egress cross-corridor doors to promote flow and meet egress requirements from both areas. However, in an emergency, these same doors may need to function as a security barrier, preventing an assailant from moving freely between pods or gaining reentry from unsecured areas.

To meet this need, facilities consider locking one or both leaves of a double egress door using electromagnetic locks. This approach raises several life safety and code compliance concerns and considerations, as it impedes egress in one or both directions, and magnetic locks are subject to specific code requirements.

Locking stairwell doors to prevent entry to different floors raises some important issues as well. Normally, these doors must both allow egress into the stairway and must unlock automatically in the event of a fire, allowing individuals to safely escape the fire and smoke in the stairway or on other floors. Often, fire alarms are activated during security incidents that do not involve fire, which can unlock doors intended to prevent entry, further complicating the situation.

Special locking configurations must be coordinated in advance with the architect, hardware supplier, security integrator, and the AHJ to ensure that all security needs are met without violating egress or fire protection requirements. In some cases, a code variance or formal AHJ approval may be necessary to implement a locking solution that addresses both containment and egress.

Whether these doors are used for compartmentation or lockdown, there must be early and deliberate coordination across disciplines to avoid conflicts between security goals and code

compliance. These doors must function effectively not only during normal operation, but also in the most critical moments of an emergency.

III. The Role of Fire Doors in Fire Containment

A. Purpose of Compartmentalization

The goal is to create self-contained areas within a structure that:

- Contain fire and smoke
- Protect escape routes and stairwells
- Preserve time for evacuation and firefighting
- Limit structural damage

B. Fire Door Function and Design

Fire doors are engineered to resist the passage of flame and smoke for a specified period, typically ranging from 20 to 180 minutes.

Their design includes:

- Fire-rated materials
- Intumescent seals that expand with heat
- Self- or automatic-closing and latching mechanisms
- Smoke seals for fume containment

C. Closure and Latching Requirements

Fire-rated doors should always be closed and latched during a fire to prevent the spread of flames, smoke, and harmful fumes. Building and fire codes mandate that these doors be self-closing or automatically closing, as well as self-latching. Leaving doors ajar or obstructed allows smoke and heat to move into nearby areas, defeating the purpose of compartmentalization.

Self-Closing or Automatic-Closing:

In the context of doors, "self-closing" refers to a door that automatically closes and latches after being opened, requiring no additional action. On the other hand, "automatic-closing" typically refers to doors that remain open until a fire alarm or other safety mechanism activates them, often through the use of a hold-open device. In many buildings, particularly schools, cross-corridor and area separation doors are frequently held open using electrified wall-mounted magnets, or electronic closers or holders. This setup enables easy movement throughout the facility during normal usage, while ensuring that the doors automatically release and swing shut in the event of an alarm.

Self-Latching:

Self-latching means the latch is designed to engage the strike plate automatically as the door reaches the fully closed position, providing a positive latch. A door that closes but doesn't latch can be pushed open by air pressure, occupant movement, or equipment traffic, allowing smoke and flames to migrate beyond its intended compartment.

It is also important to understand the difference between "latching" and "locking" a door. A latched door may or may not restrict access, depending on whether its latching mechanism can be engaged in a locked position. In contrast, a locked door requires an authorized credential, such as a key, card, or code, for entry from one area of a building to another. This distinction poses a challenge for emergency responders, as exterior and interior doors are treated differently, necessitating a balance between security and accessibility. This difference has significant implications for both life safety and security, especially regarding emergency responder access, where quick and unobstructed entry can be critical.

IV. Containing Human Threats: Lessons From Fire Control

Just as fire must be stopped from moving freely, human threats such as active shooters must be contained to a defined area to prevent escalation. In an active assailant or armed intruder event, time and access are critical. The goal is to isolate the threat, protect students and staff, and support emergency responders in gaining quick, safe access.

A. Active Assailant Containment Strategies

Key principles include:

- Securing internal doors to isolate the threat
- Establishing lockdown zones for occupant protection
- Limiting assailant movement by controlling access points
- Utilizing compartmentation doors (cross-corridor, stairwell, and unit separation)
- Identifying and utilizing secure spaces for shelter-in-place

B.

Fire Response	Active Assailant Response
Fire doors automatically close and latch.	Interior doors lock or secure to isolate the threat.
Seals contain smoke and fire.	Secured access points restrict assailant movement.
Fire-rated zones delay the spread through the building.	Lockdown zones slow or prevent the escalation of threats.
Evacuation drills prepare occupants for rapid response.	Lockdown drills train occupants for shelter and survival.

C. Parallels to Fire Doors

D. Importance of Automation: Automation reduces reliance on human reaction and improves reliability:

- **Fire**: Alarm-activated doors release from holders and latch.

- **Active Assailant**: Panic buttons or automated locking systems secure doors rapidly.

V. Emergency Responder Access: A Complex Trade-Off

While internal doors help isolate threats, they can also hamper the movement of emergency personnel during critical moments:

A. The Access Paradox

- Firefighters may need to breach fire doors to access the fire source or rescue trapped individuals.
- Emergency responders may need to move quickly through secured/locked doors to neutralize an assailant or assist individuals in need.

B. Challenges Faced by Responders

- **Fire Door Regulations**: The requirement that fire doors remain latched can complicate access for first responders needing to pass through multiple zones.
- **Time Lost Breaching Locked Doors**: Locks and physical barricades can significantly delay response times.
- **Disorientation in Complex Layouts**: Multiple secure zones can confuse responders unfamiliar with the layout, potentially compromising their ability to respond effectively.
- **Interoperability of Locking Systems:** Access to electronic locks may fail or become inaccessible due to power loss, cybersecurity issues, or incompatibility with responder tools and equipment.

VI. Designing for Both Containment and Access

To balance containment with responder access, buildings should integrate dual-priority safety design:

A. Master Access Solutions

- Maintain emergency override (master) keys or card access for authorized personnel, fire, EMS, and police.
- Install rapid access security vaults at multiple entry points for quick access by responders.
- Establish collaborative planning and training between facilities and local emergency services to ensure effective response.
- Do not install barricade type locking devices on doors.

B. Smart Integration

- Install electronic locking systems with manual overrides or features that allow quick access during emergencies, such as “responder” or “shelter-in-place” modes that secure doors while still allowing emergency responder access.
- Integrate fire alarm and lockdown systems to provide responders with real-time information on the building’s internal status.

C. Clear Wayfinding and Mapping

- Utilize responder apps or dashboards to view the building's secure zones and current threat compartments.
- Install zone response and/or video systems to identify where the danger is inside a building.
- Provide digital floor plans, interactive maps, and zone-based video feeds.
- Maintain up-to-date building maps and access point information for first responders.

D. Training and Drills With Responders

- Simulate both fire and active threat scenarios to facilitate a coordinated response.
- Involve fire, EMS, and law enforcement in regular exercises.

VII. Operational Challenges With Self-Locking Compartmentation Doors

While compartmentation doors (such as cross-corridor or stairwell doors) play a vital role in both fire safety and threat containment, they also present operational challenges, particularly when equipped with self-locking hardware. In everyday use, these doors are often held open by electronic hold-open devices, allowing for a free flow through corridors. However, if students or unauthorized individuals intentionally release or tamper with these doors, they may close and lock, resulting in unintended access restrictions. This can create significant disruption, as staff and facility personnel may need to respond repeatedly to nuisance closures, especially when access credentials are required to reenter secured areas.

It's essential to acknowledge that a closed door may delay movement, but a locked door actively restricts access, which can be a valuable asset during a security event but a liability during normal operations or emergencies where free movement is necessary. To mitigate these issues, schools should evaluate the strength of hold-open devices, ensure proper supervision and door monitoring, and consider implementing safeguards (e.g., delayed release or locking, door status monitoring, or staff-only release capability) to prevent unauthorized closures that could hinder daily operations or raise security or safety concerns outside of actual emergency events.

VIII. Action Items and Considerations

Schools must balance daily operations with the ability to respond effectively to life-safety threats. While compartmentalization is essential to both fire protection and security, it can also introduce barriers for emergency responders, particularly when interior doors are locked.

The following action items outline practical strategies to ensure doors function as intended while preserving timely and reliable access for emergency responders.

A. Audit fire and security door systems together.

- Assess each door's latching, closing, locking, and override functionality under both fire and security threat conditions.

- Ensure clear documentation defines the role of each door system in emergencies and aligns with the facility's response protocols.
- Where feasible, utilize doors that meet both fire resistance and physical security standards for multi-hazard protection.

B. Ensure first responder access to locked doors.

- Provide emergency credential access, such as master keys, access cards, PIN codes, or electronic override tools, to fire, EMS, and law enforcement.
- Install rapid access security vaults or credential boxes in multiple secured, but accessible, locations throughout the facility.
- Incorporate door hardware with a "responder" mode or manual override function that allows first responders to bypass locks without delay.
- Coordinate with local emergency services to confirm access methods are compatible with responder protocols.

Reminder: The effectiveness of any secured door is only as strong as the responders' ability to gain entry quickly during a life-threatening event.

C. Ensure free and unobstructed egress at all times.

- All egress doors must meet applicable building, fire, and accessibility codes (e.g., IBC, NFPA 80, NFPA 101, ICC A117.1), including clear width, swing direction, and hardware function.
- Ensure doors can be readily opened from the egress side without keys, tools, or special knowledge. Panic hardware or lever sets with egress capability should be used where required.
- Conduct regular checks to ensure doors, corridors, and stairwells are free from obstructions, including storage, furniture, or improperly installed devices.
- Recognize that not all emergencies require a lockdown. Some situations (e.g., fire, external hazards, gas leaks, structural failures) require immediate escape. Ensure that emergency protocols allow for flexible decision making.
- Incorporate scenario-based training that includes cues for when evacuation is safer than sheltering. Staff must know how to safely lead students out, even in hybrid events (e.g., fire during an intruder incident).
- Audit all compartmentation doors for egress functionality regularly, especially those equipped with magnetic holders or automated locks to ensure they are functioning properly. Confirm doors fail safe in power loss conditions and release for exit in all hazard scenarios.

D. Evaluate and optimize door hold-open devices.

- Use higher-hold-force magnetic door holders for cross-corridor, stairwell, and unit separation doors to prevent nuisance closures.
- Identify locations vulnerable to tampering or accidental release and upgrade hardware as needed to maintain the intended open position.
- Consider integration of door status sensors or alerts to notify facility personnel when compartmentation doors close unexpectedly.

E. Minimize nuisance closures and unauthorized locking.

- Monitor areas where students or others may intentionally close or lock doors outside of emergency situations.
- Use auto-locking hardware that minimizes the ability to engage locks without credentials.
- Review locking strategies to ensure that doors protect during an event without creating day-to-day operational burdens.

F. Maintain and test door hardware consistently.

- Conduct routine inspections (annually or semi-annually) of door closers, latches, magnets, and electronic locks.
- Document instances of malfunction, misuse, or nuisance locking to guide maintenance priorities and future upgrades.
- Include emergency responder input during periodic reviews to verify that access needs remain aligned with system capabilities.

G. Implement multi-threat automation.

- Select systems capable of responding to both fire and security threats through a coordinated automation platform.
- Link fire alarm systems with automatic door release functions and integrate access control systems with lockdown protocols.
- Ensure that emergency personnel can monitor system status in real time, including which doors are locked or released.

H. Coordinate with authorities and stakeholders.

- Host joint walkthroughs, tabletop exercises, and live drills with police, fire, and EMS personnel to enhance collaboration and coordination.
- Share digital floor plans and secure zone layouts, including door functions, access points, and override locations.
- Provide updated access credentials and maintain an open line of communication with public safety partners.

I. Build a culture of awareness and preparedness.

- Train staff on when and how to secure or unlock doors during both routine operation and emergencies.
- Develop clear policies that emphasize accessibility for emergency responders and discourage tampering with or misusing compartmentation doors.
- Reinforce understanding among all building occupants that doors are not just physical barriers; they are life-safety tools that must be maintained and respected.

IX. Balancing Containment with Unobstructed Egress

While doors used for compartmentation serve as essential barriers to contain threats, whether fire, smoke, or an active assailant, it is equally important to recognize their role in providing a means of

egress and escape. In nearly every application, compartmentation doors also serve as egress paths, and their ability to facilitate safe and timely evacuation must never be compromised.

Maintaining free and unobstructed egress is a foundational principle of both building and life-safety codes, as well as a core tenet of school safety planning. Students and staff must be able to escape quickly when conditions allow. In a lockdown scenario, each building's compartment must continue to comply with life-safety egress requirements as adopted by the local AHJ. While lockdowns or shelter-in-place protocols may be appropriate in certain scenarios, other emergencies, such as fires, explosions, or hazards occurring outside the building, may require immediate evacuation.

Key considerations include:

- Compartmentation doors must not be obstructed by furniture, equipment, or hardware that prevents free movement.
- Doors must remain readily openable from the egress side without keys, tools, or special knowledge.
- Locking hardware must be carefully selected to ensure it meets both security and egress code compliance, including panic hardware where required.
- Emergency plans should always include decision-making protocols that empower staff to determine when escape is safer than sheltering.
- Compartmentation creates critical layers of defense, but no barrier should trap occupants. Building design, hardware selection, and safety protocols must work together to ensure that when escape is the safest option, it is also the most accessible one.

X. Summary

Compartmentalization, whether achieved through fire-rated doors, smoke barriers, or secured access points, is a proven strategy for protecting lives during emergencies. By slowing the spread of fire, smoke, or a hostile threat, these doors buy critical time for occupants to evacuate or shelter, and for emergency responders to intervene. However, with this added layer of protection comes increased complexity. Locked or improperly configured doors can delay emergency response, restrict egress, or introduce operational challenges during day-to-day use.

Effective safety planning must strike a balance between containment and accessibility. This means ensuring that all compartmentation doors function as intended during fire and security events, while also maintaining free and unobstructed egress, especially in situations where escape is the safest option. It also requires careful coordination to provide emergency responders with rapid, credentialed access to locked areas and to prevent the misuse or nuisance closure of doors that are intended to remain open under normal conditions.

In today's learning environments, decisions around door hardware, electronic access control, and hold-open devices must be made collaboratively, with input from architects, hardware suppliers, integrators, facility managers, school administrators, and the AHJ. In complex conditions, such as pod-style designs with double egress doors, thoughtful planning and, when necessary, code variances are essential to ensure that safety measures are both effective and compliant.

By designing with both fire and active threat scenarios in mind, and by regularly auditing, maintaining, and training on these systems, schools can ensure their facilities are not only capable of containing danger but also fully equipped to support rapid egress and emergency response when every second counts.

References:

PASS K-12 Guidelines: https://passk12.org/guidelines-resources/pass-school-security-guidelines/

Contact Information:

For consultations or assessments on your facility's fire and security compartmentalization strategies, please contact:

The Partner Alliance for Safer Schools
www.passk12.org