



THE MAGAZINE OF EFFECTIVE COMPARTMENTATION

# Life Safety DIGEST

SUMMER 2018

How Should We Address Barriers Intended to Stop the Spread of Smoke

Fire-rated Glazing:  
A Solution for Balancing Patient Wellbeing with Life Safety

Fire, Smoke and Combination Fire/Smoke Dampers  
Knowing the differences makes all the difference  
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# SUMMER 2018



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## LIFE SAFETY DIGEST

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**H**ealthcare buildings are one of the most regulated structures in the built environment. There are several 'eyes' watching these buildings to be sure they are safe.

States, provinces and other governmental organizations oversee healthcare structure safety. The Joint Commission, HVAP, DNV, Accreditation Canada, local Fire Marshals and Building Departments also their own professional facility management and engineering staff.

In addition, because many healthcare facilities are designed with a "defend in place" strategy for fire safety, there are many fire-resistance-rated assemblies in these buildings.

This issue of *Life Safety Digest* focuses on key elements to build the "defend in place" concept. In Industry News is a new fire-resistance wallboard technology. There's an article on Fire, Smoke and Combination Fire/Smoke Dampers as well as Photoluminescent Markings for egress when it's dark in egress paths.

At many ASHE Annual Meetings, The Joint Commission reported that the biggest quantity of violations cited were from Fire Doors and Firestopping - holes in fire-resistance-rated assemblies that were treated wrong or not at all. That's why FCIA worked with The Joint Commission, UL, ASHE to deliver the "Barrier Management Symposium" educating facility directors on the right way to manage this important fire-resistance discipline. Check out the articles in this issue from Barrier Management Symposium Faculty.

Enjoy this issue of *Life Safety Digest*. Pass it on when you are finished. Don't forget, each issue is archived at <http://fcia.org/magazine.htm> for future reference. 🔥

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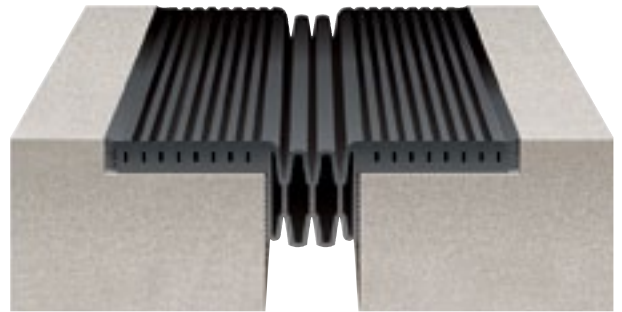
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## A Common Question, and a Common Source of Confusion In Canada and North America:

# “HOW SHOULD WE ADDRESS BARRIERS INTENDED TO STOP THE SPREAD OF SMOKE”

**H**ealthcare occupancies in North America have one thing in common. The patients can't move very quickly away from danger. They are connected to various services for fluids, oxygen, or other medical gas, and confined to a bed in many cases. This condition of the occupant dictates that the facility 'defend in place' - protect people - with fire-resistance-rated and smoke-resistant assemblies in addition to sprinklers, detection and alarms, and facility staff education and action.

There are very different opinions on how to address the smoke-resistant assemblies that protect occupants in buildings. The goal of this article is to provide information to those who wish to gain a better perspective of this requirement.

In my opinion, the differing assumption and misunderstanding stems from the lack of specificity in the National Building Code of Canada (NBCC), and the misinterpretation of the terminology used in the International Building Code (IBC) as well.

Here are some of the terms heard while travelling Canada;

*Smoke Partition*

*Smoke Barrier*

*Smoke Wall*

*Non-Rated Fire Separation*

*"0" Hour Assembly*

Let's begin by clearing things up! None of the above "Terms" are listed in the NBCC. The Smoke Partition and Smoke Barrier are defined terms in the IBC. The Smoke Barrier has a minimum 1-hour fire-resistance rating and restricts the spread of smoke from outside wall to outside wall, horizontal assembly to horizontal assembly, with supporting construction equal to the barrier. The Smoke Partition simply limits the transfer of smoke.

There is no such thing as a Smoke Wall, nor Non-Rated Fire Separation, nor "0" Hour Assembly in either the NBCC or the IBC. There is a term for Fire-Separation in the NBCC, but not in the IBC.

Here is what the NBCC code says about Fire-Separations;

### **3.1.8. Fire Separations and Closures**

#### **3.1.8.1. General Requirements**

- 1) Any wall, partition or floor assembly required to be a fire separation shall
  - a) except as permitted by Sentence (2), be constructed as a continuous element,  
and
  - b) as required in this Part, have a fire-resistance rating as specified (see Note A-3.1.8.1.(1)(b)).
- 2) Openings in a fire separation shall be protected with closures, shafts or other means in conformance with Articles 3.1.8.4. to 3.1.8.19. and Subsections 3.1.9. and 3.2.8. (See Note A-3.1.8.1.(2).)

In addition to the code requirements in section 3.1.8.1, there is an accompanying appendix that explains the requirement in greater detail.

The Appendix below "Barrier to Control Smoke Spread", discusses the fact that the fire separation does not necessarily need to have an hourly fire resistance rating. This is the case for smoke partitions in the IBC.

#### **A-3.1.8.1.(1)(b) Barrier to Control Smoke Spread.**

Although a fire separation is not always required to have a fire-resistance rating, the fire separation should act as a barrier to the spread of smoke and fire until some response is initiated.

## BASED ON ALL THIS INFORMATION, WHAT SHOULD WE DO WITH FIRESTOP SYSTEMS?

The bullet proof solution for the fire separation to act as a proven barrier against the spread of smoke is to address the requirement by providing an "L" rated "Tested Firestop Assembly".

What's an "L" Rating? The "L" Rating, or air leakage rating, simulates smoke movement through assemblies. The "L" Rating is part of *CAN/ULC-S-115, Standard Method of Fire Tests of Firestop Systems, UL 1479, Standard for Fire Tests of Penetration Firestops, and UL 2079, Standard for Tests for Fire-Resistance of Building Joint Systems.*

The "L" Rating is unique to the UL Firestop Standard. Laboratories other than UL can test to UL's CAN/ULC-S-115 or UL 1479/UL 2079, but they have to use the UL Standard as a tool. The italicized text below explains how the "L" Rating works.

*The "L" Rating measures the amount of air that moves through an opening in cubic feet per minute per square foot of opening area, at ambient temperatures (75°F, 23.9°C) and hot temperatures (400°F, 204.4°C). The two temperature levels simulate cold and hot smoke moving in a building. Ratings are stated in "<x cubic feet per minute (cfm)/square feet (sf) of opening area". The ratings are stated right below the F and T Ratings on the UL Listings.*

The following holds true for BOTH fire-resistance-rated fire separations and non-fire-resistance-rated fire separations. Both assemblies have to remain in place during the event. Both assemblies protect occupants against the spread of smoke for a period of time until some response is initiated. The response is either people - firefighters - or automatic sprinkler systems, that actuate and control the fire.

Using an "L" Rated Firestop System in a fire-resistance-rated or non-fire-resistance-rated assembly provides the closest quantified proof that the material installed as a system will provide the best protection possible in case of smoke spread.

This approach meets the intent of the NBCC Code requirement that the assembly protect against smoke spread until a response of some kind occurs. AND, an "L" Rated Firestop System used in a fire-resistance-rated or non-fire-resistance-rated assembly provides the building owner with 3rd party, independent laboratory tested documentation that the materials installed to the listings provide the closest approximation and a quantified degree of protection against smoke spread.

## IN OTHER WORDS, A SMOKE RESISTANT ASSEMBLY SHOULD MEET THE SMOKE PERFORMANCE CRITERIA OF A FIRE SEPARATION, EVEN WITHOUT A FIRE-RESISTANCE RATING.

FCIA's Firestop Manual of Practice and many other articles written by FCIA in Life Safety Digest supports this statement that "L" Rated Firestop Systems should be used in non-fire-resistance-rated assemblies that are to resist smoke movement.

Protecting people against fire and smoke spread in buildings is a big deal in healthcare facilities throughout North America.

Don't get caught short. Specify "L" Rated Firestop Systems in healthcare facilities to protect the patients and staff who have to defend against spread of fire and smoke. And, document that Firestop Systems exist in buildings to maintain the barriers for the building life cycle. 🔥

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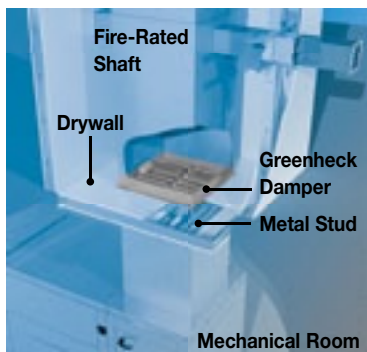


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# PREVENTATIVE CARE

## Fire-rated Glazing: A Solution for Balancing Patient Wellbeing with Life Safety

**W**hen people are asked to describe hospitals and healthcare centers, the word “fire” does not typically come to mind. Unfortunately, it is more apt than many think. According to the National Fire Protection Association (NFPA), thousands of fires occur in healthcare facilities each year. Between 2011-2015, the NFPA reports that U.S. fire departments responded to an estimated annual average of 5,750 structure fires in these properties each year.

Given the frequency with which fires occur in healthcare facilities, it is important to make every effort to prepare for the unexpected by developing a comprehensive fire- and life-safety plan.

Building compartmentation is a critical component of this process. Using properly designed and installed fire-rated materials and systems to subdivide spaces into contained areas during a fire helps slow the spread of flames, smoke and, where necessary, heat. These materials and systems work in conjunction with automatic sprinkler systems to provide mobile occupants with adequate time to exit the facility. They also increase the safe haven period for patients who must remain inside when these unexpected events occur, and they give firefighters a larger window of time to arrive and extinguish the fire, thereby protecting those non-mobile patients.

While building compartmentation provides many clear fire- and life-safety benefits in healthcare settings, it can conflict with design goals geared towards improving patient well-being. Many common fire-rated building materials, like concrete and gypsum, can satisfy fire- and life-safety criteria and effectively subdivide spaces. The challenge is their opaque form restricts light transfer and visibility.

Fire-rated glazing can help building teams resolve the dilemma that light and views are key elements in patient recovery (Noell-Waggoner, 2002; CABE, 2004). It is the only class of material – that when installed to the tested and listed assembly – is able to comply with



**A fire-resistance-rated glass curtain wall creates a light, open lobby. TGP Photo**

stringent building codes for fire compartmentation without restricting daylight and visibility, bridging the gap between patient well-being and life-safety.

### **A BETTER WAY WITH FIRE- RATED GLASS**

While fire-rated glazing systems are best known for its ability to help contain a fire to a limited area, its see-through form can perform double duty and allow light to reach deep into interior spaces, and is code compliant. Products are available that can block the spread of flames and smoke (fire-protection rated), as well as defend against the transfer of radiant and conductive heat (fire-resistance-rated) to meet specific project needs.

With proper specification, their transparency can turn spaces that would otherwise be dark, isolated and contrary to occupant well-being into peaceful, light-filled areas. In fact, with the rise in fire-resistance-rated glass systems, the material’s daylighting potential has never been greater.

Due to their heat-resistant capabilities, fire-resistance-rated glass systems pass the same tests as solid walls (*ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials, and Underwriters Laboratories (UL) 263, Standard for Fire Tests of Building Construction and Materials*). As such, they can exceed 25 percent of the total wall area, making it possible to increase the amount and size of glazing in spaces requiring fire-resistance-rated materials.

For example, instead of incorporating a simple vision lite in the doorway of a prominent area of egress, design teams can install full-lite fire-resistance-rated glass doors that function as part of an overarching fire-resistance-rated glass curtain wall assembly. By doing so, they can create a bright, open and welcoming entrance for hospital patients.

Today, building teams can select from numerous fire-resistance-rated glazing systems to balance patient well-being goals with fire- and life-safety needs, such as:

- full-lite glass door assemblies;
- transparent glass walls;
- curtain walls;
- silicone-glazed curtain walls;
- butt-glazed walls; and
- glass floors.

## **PRESCRIPTION FOR SAFETY**

While healthcare building plans increasingly call for fire-rated glazing to aid patient health goals in critical fire-rated areas, project teams may not be familiar with the nuances of this life-safety product that becomes a system after installation to the listing and manufacturer's installation instructions. To help maximize fire-rated glass' potential in healthcare settings, both for fire-protection and fire-resistance-rated glass, start by testing plans against the acronym "C.A.R.E."

## **CHECK FOR CODE COMPLIANCE**

A critical first step when working with fire-rated glazing systems is to check for code compliance. Building code requirements for assemblies vary by location in the building, and in some cases, by occupancy. This means a given product may meet the required level of fire performance (fire protection or fire-resistance) and fire-rating for one area within a hospital, but not another.

To check for code compliance, start with the glass assembly's fire-rating and listing for use. Fire-ratings for glass and frames range from 20-minutes to 3-hours and are shown on the product's label, as well as the listing. The given number of hours or minutes of protection or resistance corresponds with testing in accordance with national fire test standards.

To ensure a product's fire-rating matches building code requirements, reference requirements for fire-rated glass in Chapter 7 of the International Building Code (IBC). The 2012 IBC code edition helps clarify any confusion around the use of fire-protection and fire-resistance-rated glazing, simplifying application and restriction guidelines. Where questions arise, contact the manufacturer, supplier or local Authority Having Jurisdiction (AHJ) for clarification.

The second step is to verify all assembly components have the same, or greater, ratings and performance level than the required code minimums for the opening. This includes the frame, glass, seals and other components. This is a critical safeguard since fire-rated glass assemblies with mismatched parts may fail prematurely, allowing fire to spread unchecked through buildings.

Since product verification can require a significant amount of due diligence, a solution is to work with a manufacturer or supplier that offers fire-rated glass assemblies from a single source. For example, suppliers offer fire-resistance-rated glass curtain walls that are tested as a complete system, from the glass and frames to hardware and all component parts. The fire-rating encompasses the profiles, the maximum glass size and how the glass is captured. This helps ensure the entire assembly provides the same category of fire resistance and carries the minimum fire rating, as required in the IBC. This also helps remove any concerns about inconsistent fire-ratings and diminished fire protection levels.

## **ADD VISIBILITY**

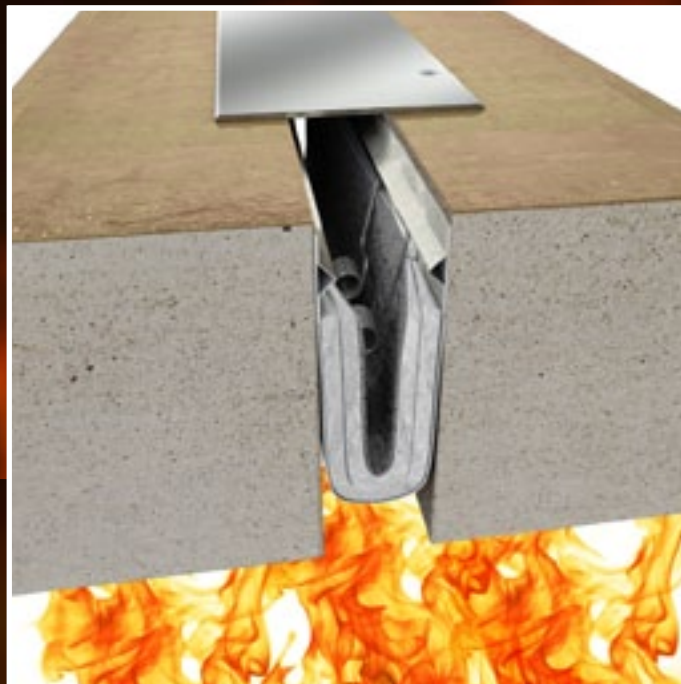
In addition to providing critical defense against the spread of fire, fire-rated glass and framing products used in tested and listed assemblies and installed to the manufacturer's installation instructions can further enhance safety through improved visibility. Clear lines of sight in main thoroughfares and frequently travelled areas of egress help simplify wayfinding in fast-paced healthcare settings. They also help people smoothly exit during fire events and bolster security. As an added benefit, enhanced visibility can help prevent patients and staff from feeling isolated and can encourage positive interaction, even in areas with strict fire- and life-safety requirements.

To use fire-protection and fire-resistance-rated glass systems to maximize visibility in healthcare settings, it is important to select products with a nearly distortion-free viewing surface. For example, fire-protection-rated glazing products, such as fire-rated glass ceramic, can be ground and polished on both sides. Such glass has a smooth surface finish, high-visible light transmission and low reflection, making it ideal for areas where clear lines of sight are desired. Fire-resistance-rated glass systems are also available with nearly the same level of visual clarity as ordinary float glass. They enable large,



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**In Cincinnati Children's Medical Center, fire-rated glass and framing within a stairwell extends line of sight for occupants. TGP Photo**

clear viewing areas in locations subject to strict fire-rated criteria by code.

To ensure optimum visibility, building teams can place high-performing, clear, fire-protection-rated and fire-resistance-rated glazing products and systems in a wide array of orientations that extend sight lines, as long as code-compliance is maintained. For example, it is possible to place fire-resistance-rated glazing systems directly in line with non-fire-resistance-rated glazing systems; place them above open spaces in interiors, such as multi-story shafts; or incorporate them in typically dark spaces, such as stairwells. Additional beneficial orientations can include:

- incorporating fire-resistance-rated glass panes in corridors and gathering areas;
- using fire-resistance-rated glass in the interior walls of glazed elevator shafts and in corridors;
- and incorporating exterior fire-resistance-rated glazing systems (e.g., curtain wall), where fire defense is needed on a building's exterior walls or perimeter.

It is important to note that while visibility is beneficial in many areas of healthcare facilities, others also require an element of privacy. Consider patient quarters where visibility and patient privacy are equally important to a patient's well-being. In these areas, building teams can specify fire-protection-rated glass that has been lightly sandblasted to balance visibility with privacy. Fire-resistance-rated glazing that incorporates louvers between hermetically sealed panes of fire-resistance-rated glass allows healthcare professionals to position the louvers to permit vision and light into one area, but limit it in the opposite direction.

## REFLECT THE HEALTHCARE CENTER'S AESTHETIC

Creating spaces where patients can heal and recover faster is central to the success of healthcare facilities. While good daylight and visibility factor prominently into the outcome, so too do aesthetics. Cold, sterile environments do little to promote patient well-being, and healthcare design teams do not want to be cornered into such an outcome for the sake of fire- and life-safety.

Thankfully, due to recent manufacturing advances, it is possible for fire-protection and fire-resistance-rated glass and framing systems to better reflect a given healthcare center's desired aesthetic. A primary way is by allowing fire-protection and fire-resistance-rated frames to create a close visual match with neighboring non-rated curtain wall, window and door systems. For example, modern steel fire-resistance-rated frames have a slender profile and sleek aesthetic. Compared to the traditional wrap-around form of traditional hollow metal steel frames, they can be much narrower, have well-defined edges (rather than rounded profiles), and have vertical-to-horizontal framing joints without visible weld beads or fasteners. Some fire-resistance-rated frames can even be powder coated or anodized to match nearly any color scheme.

Taking visual integration one step further, it is now possible to specify fire-resistance-rated glass curtain walls with the smooth, monolithic appearance of a structural silicone glazed system. One available assembly is silicone-sealed and requires no pressure plates or caps. Its toggle retention system becomes completely hidden once installed, creating a seamless, uninterrupted surface appearance.

## ENHANCE SAFETY

With the frequent movement of staff and heavy equipment in healthcare centers, impact safety must also be a high priority, even in areas with fire-safety criteria.



**Lightly sandblasted full-lite fire-rated glass doors balance privacy with vision and blend in with the hospital's soothing design plan. TGP Photo**

While it is easy to assume all fire-rated glazing provides this added level of protection with its tough form, this is not always the case. In fact, for decades, fire-rated glass – either fire-protection-rated or fire-resistance-rated – with high-impact safety was nearly inconceivable. The only fire-rated glass product available at the time—traditional, fire-protection-rated polished wired glass—was a low impact material. However, since it was the only glass offering that could protect against the spread of flames and smoke for a reasonable length of time, it was granted a code exemption and deemed suitable for use in areas requiring fire- and impact-safety protection. This exemption left the door open to injuries from glass breakage.

To improve the safety of today’s buildings, the IBC code now requires fire-rated glazing in hazardous locations to also pass an impact safety test. This includes all fire-rated glass in doors, and typically also applies to the fire-rated glazing adjacent to or near the door, including side lites or glass located near the floor. Depending on the application, fire-rated glass in these locations must meet either CPSC 16CFR (Category I) or CPSC 16CFR 1201 (Category II) impact classifications.

The good news is with today’s fire-protection and fire-resistance-rated glass products that become systems when installed to the listings and manufacturer’s installation instructions, design professionals no longer have to trade fire protection or resistance for impact

safety in healthcare settings. For example, some fire-resistance-rated glazing materials, defend against the spread of fire, while simultaneously providing up to Category II impact-safety ratings. Advanced offerings also have the capability to provide supplemental security protection, such as bullet and hurricane resistance.

## CONCLUSION

According to Nick St. Denis, director of research at Key Media & Research, “The institutional side of non-residential construction, which is largely comprised of the educational and healthcare building segments, is on pace for another lift in 2018 following a strong 2017.” Fire-rated glazing, with its ability to further daylight and views, can help ensure these new buildings are well-lit, safe and conducive to patient care. 🔥

*Jeff Razwick is the general manager of Technical Glass Products (TGP), a supplier of fire-rated glass and framing systems, and other specialty architectural glazing. He writes frequently about the design and specification of glazing for institutional and commercial buildings and is a past chair of the Glass Association of North America’s (GANA) Fire-Rated Glazing Council (FRGC). [www.fireglass.com](http://www.fireglass.com), (800) 426-0279*



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## FEATURED STORY

WRITTEN BY AMCA INTERNATIONAL INC.  
FIRE & SMOKE DAMPER TASK FORCE

# FIRE, SMOKE AND COMBINATION FIRE/SMOKE DAMPERS

## Knowing the differences makes all the difference in properly specifying life-safety dampers

**T**he leading cause of death from fire is the spread of smoke and toxic gases. Restricting the spread of smoke and toxic gases—as well as flame—is the role of fire-resistance-rated assemblies, also known as passive fire protection.

Passive fire protection is based on the concept of compartmentalization, the division of a building into “fire compartments” bounded by fire-resistance-rated separations (fire walls, fire barriers, fire partitions) and smoke barriers/smoke partitions.

Preventing the migration of smoke and/or fire through HVAC ductwork penetrating openings in fire-resistance-rated assemblies is the role of the fire, smoke or combination fire/smoke damper. These damper types perform different functions and, thus, are installed and maintained differently. Knowing the differences is imperative to the proper application, installation and performance of these dampers in a life-safety system.

### FIRE DAMPERS

According to UL: “Fire dampers are used to restrict the spread of fire where ducts and air transfer openings penetrate fire walls, fire barriers, fire partitions, horizontal assemblies and shaft enclosures. They can also be employed in air transfer openings in walls and partitions.<sup>1</sup> In other words, their primary function is to prevent the passage of flame from one side of a fire-resistance-rated assembly to the other. (Fire dampers are not rated for prevention of the passage of smoke.)

Designed and tested in accordance with UL 555, *Standard for Fire Dampers*,<sup>2</sup> fire dampers are available in two basic designs: curtain (Figure 1) and multiblade.

Curtain-type fire dampers consist of a “steel curtain,” while multiblade fire dampers are similar to air-control dampers, with “blades” located in the air stream. Both are activated by a heat-responsive device—a fusible link that holds the curtain or blades open until duct temperature reaches the link’s melting point, at which the curtain or blades close to stop flame from moving into an adjoining compartment.

Both UL 555 and the International Building Code (IBC)<sup>3</sup> set a minimum operating temperature for fire dampers of 160°F (71°C). For most applications, an operating temperature approximately 50°F (10°C) above the normal temperature within the duct is recommended. The maximum operating temperature is 212°F (100°C) for static rated dampers and 350°F (177°C) for dynamic rated dampers.

There are two types of applications for fire dampers: static and dynamic. Static fire dampers can be applied only in HVAC systems designed to automatically shut down in the event of a fire. Dynamic fire dampers have been tested for closure under airflow and carry maximum duct-velocity and static-pressure-differential ratings. The minimum rating for all dynamic fire dampers is 2,000 feet per minute (fpm) (10.2 m/s) and 4.0 in. w.g. (1 kPa). The ratings go up in increments of 1,000 fpm (5.1 m/s) and/or 2.0 in. w.g. (0.50 kPa) from the minimum.

Fire dampers approved for dynamic systems also are approved for static systems. Fire dampers approved for static systems, however, are not approved for dynamic systems, as they may not close under airflow.



**Figure 1: Curtain fire damper with fusible link and factory-integral sleeve. Ruskin Photo.**

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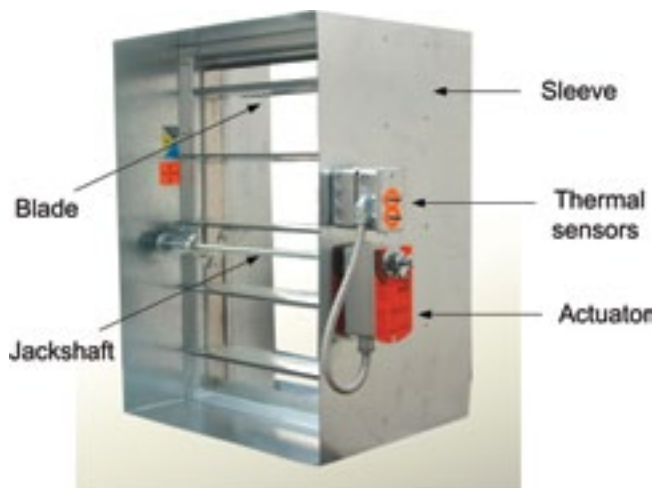
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**Location.** Generally, fire dampers are installed in penetrations through fire-resistance-rated walls or floors. A damper is to be installed in an opening (per the manufacturer's instructions) to maintain the fire-resistance-rated integrity of the wall or floor/horizontal assembly.

**Sleeves and attachment.** Fire dampers are required to have sleeve-type connections. Sleeves 18 to 20 gauge in thickness require a breakaway connection from the sleeve to ductwork. Heavier sleeves—those 16 gauge and thicker—may be installed with a rigid or hard duct connection. There is a limit to the distance a sleeve can protrude from a wall (Figure 2). Most installations require the use of retaining angles to block the gap between damper sleeves and wall/floor openings and to help secure dampers to barriers. Manufacturer installation instructions incorporating the listings dictate installation methods (Figure 3).



**Figure 2: Sleeved multiblade fire damper with heat-responsive devices. Pottorff Photo.**

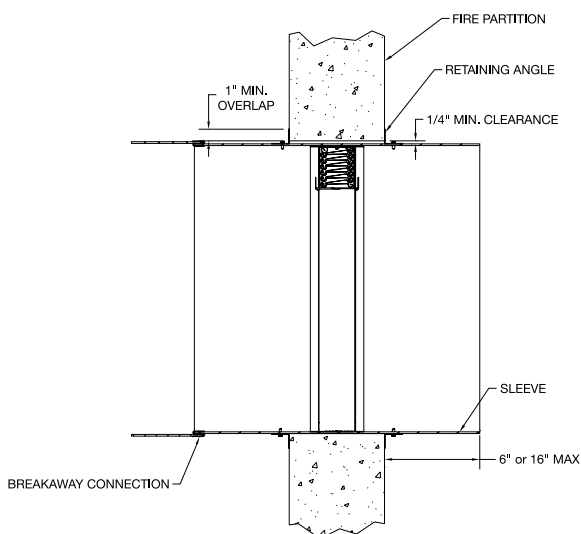
**Sealing.** Breakaway connections and other seams can be sealed, if the manufacturer's listing and installation instructions allow the use of a specific brand of sealant. In most cases, firestopping is not required at the annular space between a damper and opening. With some tested and listed assemblies, retaining angles are required only on one side of the fire-resistance-rated assembly, without the use of firestopping products. In some cases, firestop systems might be needed on one side of the assembly and the metal retaining angles on the other side.

## SMOKE DAMPERS

According to UL: "Smoke dampers are used to restrict the movement of smoke where ducts and air transfer openings penetrate assemblies that are designed to restrict the movement of smoke. The devices are installed to operate automatically, controlled by a smoke detection system, and where required, capable of being positioned" (opened or closed) "from a remote command station."<sup>1</sup>

Qualified under UL 555S, *Standard for Smoke Dampers*,<sup>4</sup> smoke dampers (figures 4A and 4B) are operated by a factory-installed electric or pneumatic actuator and controlled by smoke detectors and/or a fire-alarm panel. Smoke dampers have two general applications:

- As part of a "passive smoke-control system" whereby they close upon detection of smoke and prevent the circulation of air and smoke through a duct, transfer or ventilation opening.



**Figure 3: Typical fire-damper installation. Ruskin Image.**

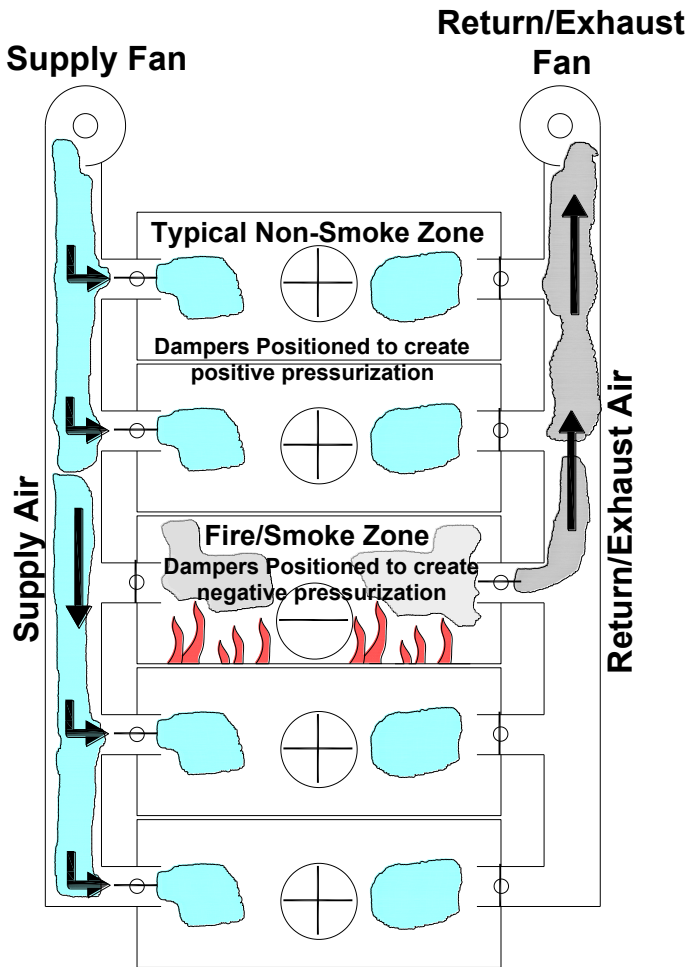


**Figure 4A: Typical smoke damper—axle-shaft-mounted actuator. TAMCO Photo.**



**Figure 4B: Typical smoke damper—jackshaft-mounted actuator. Nailor Photo.**





**Figure 5: Engineered smoke-control system—sandwich pressurization.**  
AMCA Image

- As part of an “engineered smoke-control system” using walls and horizontal assemblies/floors as barriers to create pressure differences (Figure 5). Pressurizing the areas surrounding a fire helps to contain the spread of smoke.

**Location.** NFPA 90A, *Standard for the Installation of Air-Conditioning and Ventilating Systems*,<sup>5</sup> states smoke dampers are to be installed at or adjacent to and no more than 24 in. from smoke barriers. They are to be used on both the supply and return sides of ducts entering a smoke compartment. Manufacturer installation instructions that incorporate the listings provide approved installation details.



**Typical Fire/Smoke Damper installation with retaining angle.** Greenheck Photo.

**Sealing.** Specific UL-approved sealant/caulk usually is required to seal a smoke damper to a duct/sleeve. The sealant/caulk is not intended to provide firestopping on the outside of the ductwork where it runs through a fire-resistance-rated or smoke-resistant wall or horizontal/floor assembly. Specific listed firestop systems are meant to return the wall or floor to the fire-resistance-rating it had prior to an opening for the damper to pass through being made.

Only smoke dampers, combination fire/smoke dampers and corridor dampers are leakage-rated. (Table 1) shows the maximum leakage value at a specific pressure for each UL leakage classification. The IBC requires at least a Class II leakage rating.

Class	4 in. w.g.	6 in. w.g.	8 in. w.g.	10 in. w.g.	12 in. w.g.
I	8.0	9.5	11.0	12.5	14.0
II	20.0	24.0	28.0	31.5	35.0
III	80.0	96.0	112.0	125.0	140.0

**Table 1: Maximum leakage (cubic feet per minute per square foot).** AMCA Image.



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- Can be easily ganged together with gang plate accessory for wall and floor applications

## COMBINATION FIRE/SMOKE DAMPERS

Evaluated and tested to both UL 555 and UL 555S, combination fire/smoke dampers (Figure 6) meet both the fire damper and smoke damper requirements described previously. They are used where HVAC assemblies penetrate openings in a wall, horizontal assembly/floor or ceiling that is required to have both a fire damper and a smoke damper. These dampers close upon the detection of heat (via duct temperature) or smoke (via a smoke detector) and protect the opening both inside the duct and outside at the barrier.

Most combination fire/smoke dampers are equipped with a thermal switch instead of a fusible link. Use of a thermal switch allows for a more controlled closure, avoiding the slamming sometimes experienced with a fusible link and helping to prevent instant pressure changes, which cause problems in HVAC systems



**Figure 6: Combination fire/smoke damper (two-section) with electric heat-response device. Greenheck Photo.**

Dampers with airfoil blades produce less pressure drop than dampers with formed single-thickness (e.g., triple vee [3V] or crimped) blades. Less pressure drop produces less resistance, which translates to energy savings. System designers should select products with pressure-drop performance data certified by a third-party, such as Air Movement and Control Association (AMCA) International.

### IMPORTANT NOTE ON INSTALLATION

Life-safety dampers should always be installed in accordance with the manufacturer's installation instructions. One manufacturer's installation instructions never should be used for the installation of another manufacturer's damper because of the uniqueness of each manufacturer's damper assembly and how it was tested. Remember, the manufacturer's installation instructions incorporate the listings from the testing laboratory.

It is important that a damper manufacturer's approved installation sheets be made available to the Authority Having Jurisdiction (AHJ) during installation review. The UL certification requires a set of manufacturer's installation instructions be included in each shipping container of life-safety dampers.

With any building system, inspection and maintenance are essential to proper operation. This is especially true with life-safety systems. NFPA 105, *Standard for Smoke Door Assemblies and Other Opening Protectives*,<sup>6</sup> and NFPA 80, *Standard for Fire Doors and Other Opening Protectives*,<sup>7</sup> require dampers to be tested during commissioning and inspected one year after installation and every four years after that (except for hospitals, in which case the frequency is every six years). The inspections must be documented, with the location of the damper, the date of the inspection, the name of the inspector and inspection agency and any deficiencies that were discovered noted. Below is new specific language from Chapter 7 of the 2018 International Fire Code<sup>8</sup>:

#### SECTION 701 - GENERAL

**701.6 Owner's responsibility.** The owner shall maintain an inventory of all required *fire-resistance-rated* construction, construction installed to resist the passage of smoke and the construction included in Sections 703 through 707. Such construction shall be visually inspected by the *owner* annually and properly repaired, restored or replaced where damaged, altered, breached or penetrated. Records of inspections and repairs shall be maintained. Where concealed, such elements shall not be required to be visually inspected by the *owner* unless the concealed space is accessible by the removal or movement of a panel, access door, ceiling tile or similar movable entry to the space.

#### SECTION 706

##### DUCT AND AIR TRANSFER OPENINGS

**706.1 Maintaining protection.** Dampers protecting ducts and air transfer openings shall be inspected and maintained in accordance with NFPA 80 and NFPA 105. Other products or materials used to protect the openings for ducts and air transfer openings shall be securely attached to or bonded to the construction containing the duct or air transfer opening, without visible openings through or into the cavity of the construction. Any damaged products or materials protecting duct and air transfer openings shall be repaired, restored or replaced.

**706.2 Unprotected openings.** Unprotected duct and air transfer openings in *fire-resistance-rated* construction and construction installed to resist the passage of smoke shall be protected so as to comply with requirements that were in effect when the building was constructed.

(Article continued on page 28)

# THE ADVENTURES OF **APEX** THE FIRESTOPPER

IN THIS ISSUE,  
APEX ASKS THE  
BURNING QUESTION:



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# PHOTOLUMINESCENT EGRESS PATH MARKINGS IN HEALTHCARE FACILITIES

**S**tarting with the 2009 editions, both the IBC - *International Building Code* and IFC - *International Fire Code* have been requiring Luminous Egress Path Markings in high-rise occupancies, including I - *Institutional*, which includes hospitals, care centers, nursing homes and more. The 2009 and 2012 IBC editions have the requirements in Section 1024, while the 2015 IBC has the requirements in Section 1025.

Luminous Egress Path Markings may be made of any material, as long as an electrical charge is **not** required. These NON-electrical Egress Path Markings are also referred to as Low Location Lighting or Floor-Proximity Lighting.

Should a building fire occur, smoke gets generated. Smoke is lighter than air and rises under the ceiling, thereby obscuring the ceiling lights. Building occupants shall drop to the floor to evacuate out underneath the toxic smoke layer. While down there, they follow the non-electrical photoluminescent guidance lines.

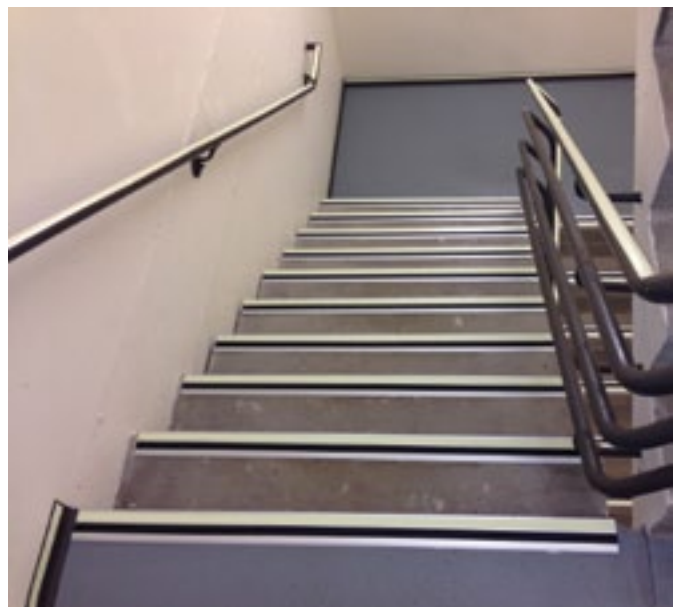
In addition to such a smoke scenario, luminous egress path markings also work during power failures, natural disasters such as tornadoes, earthquakes and hurricanes, or simply when it is suddenly dark in a built environment.

Photoluminescent materials - the technology typically used for the more general term "luminous" - absorb ambient lighting, such as LED (Light Emitting Diode) and Fluorescent lighting, which, in general, is present inside buildings. When plunged into darkness, their bright, typically yellowish glow immediately becomes visible. In order to be code compliant, not just any "glow-in-the-dark" can be used. Underwriters Laboratories, Inc. (UL) developed Standard **UL1994** for *Luminous Egress Path Marking Systems*. This *Standard for Safety* challenges a photoluminescent marking in a variety of tests and only products that successfully passed all requirements are eligible to carry the UL-listed *Mark for Safety*. As with other types of UL Listed products a manufacturer's UL1994-listing can be verified on the UL website: <http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.html>

Healthcare facilities know that a leading cause of accidental death for the elderly, as well as one of the leading causes of employee and guest injuries for a large number of property owners are slips and falls. Photoluminescent Markings that are used on the horizontal floor assemblies have to pass a UL410 - *Slip Resistance of Floor Surface Materials* test. If a photoluminescent marking successfully passed the UL410 test, the manufacturer's UL1994-Listing will specifically say: **Suitable for Stair Nosing/Floor use.**

## WHERE ARE THE MARKINGS INSTALLED?

Per the nationwide Building Codes, photoluminescent markings shall delineate the exit path within exit enclosures of occupancies having occupied floors located more than 75 feet above the lowest level of fire department vehicle access. Typically, those are high-rise buildings with six floors and more. The photoluminescent markings get installed full width on the front stepping surface of each step inside an enclosed stairway, plus on the leading edge of landings. Naturally these step edge installed markings must have successfully passed the UL410-floor-suitability test.



**Solid and continuous stripe on horizontal leading edge. American Permalite Photo**

# UNLIMITED?

## Not when it comes to fire rated glass

**Beware** of advertisements urging designers to 'be unlimited' when using ceramics with 'fire ratings up to 3 hours.' The problem is that while ceramics are listed up to 3 hours, the IBC specifically limits its size and applications after 45 minutes. The code limits the use of ceramics to 100. sq. inches in 60/90/180 minute doors and ceramics cannot be used at all in 60/120 minute interior windows, sidelites and transoms regardless of whether sprinklers are employed or not.

For truly unlimited glazing, fire resistive products tested to ASTM E-119 like **SuperLite II<sup>XL</sup>** must be used. **SuperLite II<sup>XL</sup>** can be used up to the maximum size tested in all fire rated applications.

Here's a side by side comparison of fire protective vs. fire resistive glazing used in a 1-hour stairwell application:

### **Ceramics (Fire Protective)**



Filmed or Laminated Ceramic in a 60 minute temperature rise door limited to 100 square inches

### **SuperLite II<sup>XL</sup> (Fire Resistive)**



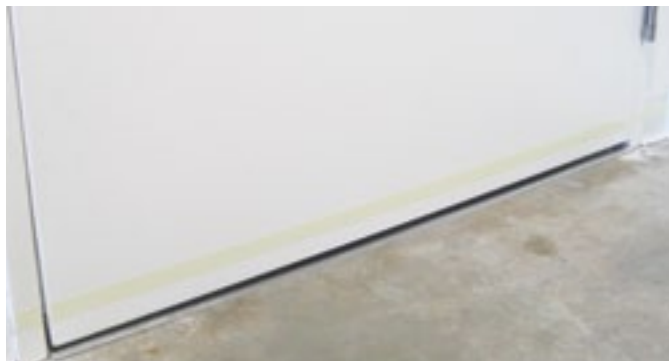
SuperLite II-XL 60 in a 60 minute temperature door over 100 square inches. The sidelites and transoms also use SuperLite II-XL 60 in GPX Architectural Series Framing

For more information on USA-made, code-compliant fire rated glass and framing products, visit [www.safti.com](http://www.safti.com) or call **888.653.3333**.



**Top surface of handrail with gaps up to 4-inches.  
American Permalite Photo**

All handrails inside enclosed exit enclosures must be marked on the top surface of the handrail, both the rail attached to the wall, as well the inside handrail. Markings may be interrupted up to 4-inches. It is recommended to not install the photoluminescent material on bends and curved handrail turns.



**Wall-mounted-Perimeter Demarcation Line across a  
NO-EXIT door. American Permalite Photo**

Perimeter demarcation lines really support the idea of this non-electrical Low Location Lighting: stair landings and any other horizontal floor areas within an exit enclosure get marked with a solid and continuous demarcation line. While the Building Codes allow a floor-mounted and/ or a wall-mounted demarcation line, the wall-mounted demarcation line is the favored marking. On the floor, dust and dirt accumulate. Healthcare cleaning crews may come through the facility with aggressive cleaning equipment and harsh cleaning solutions that a floor-installed marking would repeatedly be exposed to. It is much better to install the perimeter demarcation line on the wall with its bottom edge no more than 4 inches above the finished floor.



**Obstacles marked.  
American Permalite Photo**

Obstacles that project into the exit path for more than 4 inches get pointed out at 6 feet 6 inches (78 inches) in height in a Photoluminescent/contrast Black marking to prevent building occupants from bumping into pipes, fire equipment or other protrusions inside the emergency staircases.

Doors from exit enclosures through which building occupants have to pass in order to complete their exit path get marked several ways. A photoluminescent strip is applied to both sides and the top of an exit door frame. The activating portion of a push bar is highlighted with a photoluminescent strip. The ISO-compliant emergency exit symbol "Man Running" left or right gets installed on exit doors with the top of the symbol no higher than 18 inches above the finished floor, so this sign remains visible underneath a smoke layer.



**Top and sides of door frames,  
push bar + sign exit doors.  
American Permalite Photo**

Sometimes overlooked, but required by the Building Codes, are Floor Identification Signs. In the 2009-edition of the IBC, they are covered in Section 1022.8.1 Signage Requirements (6). In the 2012-edition of the IBC, they are covered in 1022.9.1 (6), and in the 2015-edition of the IBC, they are in 1023.9.1: 6. Where signs required by Section 1023.9 are installed in the interior



**Floor Identification Sign.  
American Permalite Photo**

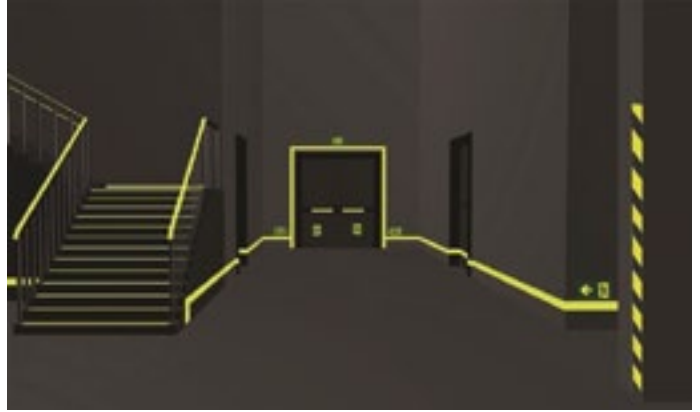
exit stairways and ramps of buildings subject to Section 1025, the signs shall be made of the same materials as required by Section 1025.4.



## WHY INSTALL PHOTOLUMINESCENT EGRESS PATH MARKINGS?

A healthcare facility is required to have all the code-required electrical emergency lighting installed. But as Hurricane Sandy in October 2012 showed, several hospitals made the media news reports due to their multiple electrical and mechanical systems failures. These facilities were not required to have photoluminescent markings installed in their emergency staircases. CBS NEWS published images where teams carrying hospital patients down otherwise fully darkened staircases were guided by flashlights.

We never know which particular emergency will arise in the future, whether the power failure is due to the back-up generators not kicking in, or maybe a building fire with smoke. But we know that Hurricane Sandy was a perfect reminder of just one of the possible scenarios where electrical emergency lighting did not work. Those are the cases where NON-electrical Photoluminescent Egress Path Markings help guide building occupants out to safety, and that is the reason why the International Code Council added these markings into their codes. 🔥



American Permalight Image

Marina Batzke, General Manager of American PERMALIGHT, Inc., Torrance, California has been in the photoluminescent safety field for 30 years. She is ASTM committee E12.13 chairperson on 'Photoluminescent Safety Products' and member of the UL Standards Technical Panels UL924 for Exit Signs and UL1994 for Luminous Egress Path Marking Systems. You find American PERMALIGHT®'s UL1994 listing in the UL Online Certifications Directory at <https://tinyurl.com/y99mrewz>

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## “TECH SHORTS” FOR FIRESTOPPING

**H**W”, Head of Wall Firestop Systems- The following question frequently comes up at the FCIA Office. Does the firestop system at the Head of Wall (top) need to specifically state that the flutes of a metal deck with concrete topping running parallel or perpendicular to the fire-resistance-rated wall? Should the firestop contractor just go by the picture shown on the system or read the text of the design?

The Head of Wall Firestop System extends the fire-resistance-rating of the wall to the next fire-resistance-rated horizontal assembly. There systems might have smoke resistance (L-Ratings) for smoke barriers and smoke partitions too. There are two types of systems for the head of wall firestop system. One is ‘D’ Dynamic that allows for movement. The second type is “S” for Static system, meaning no movement of either the wall or the horizontal assembly.



**HW assembly, metal deck flutes running parallel to the wall. Fire Stop Technologies Photo**

Back to the question. What if the system shows the horizontal metal deck flutes running perpendicular to the wall assembly when the system shows the assembly with flutes running parallel. The answer is, we need another system solution for the condition.

Some HW systems only allow for flutes running in one direction (parallel for instance). That means there might be two separate systems for the HW joint in one room. Professional firestop contractors pay attention to this and find a system that covers both conditions instead. Also, it’s important to pay attention to this detail when there is a structural element (beam) penetrating the head of wall joint.

Currently, many of the tested systems for beam penetrations in the head of wall joints are only applicable for when the wall is running parallel to the flutes of the metal deck.

Firestop contractors need to be requesting Engineering Judgements or Equivalent Fire-Resistance-Rated Assemblies (EJ/EFRRRA) if there are no systems from any manufacturer for conditions where flutes are perpendicular to the wall. We respect that the manufacturers of firestop products continue to test their products for suitability of use for many conditions and look forward to new developments in this area.

**“BW”, Bottom of Wall Firestop Systems** - It seems the majority of the concrete wall bottom of wall (BW) firestop joint systems require a horizontal assembly that is 4 ½” thick. If the floor is thinner than 4-1/2” thick, then an Engineering Judgement from the manufacturer might be required. The only exception is listed in the UL Guide Information for UL 2079, Joint Systems. From the UL Guide Information, at UL.com’s Online Certification Directory;

“Floor-to-floor and floor-to-wall joint systems that specify installation in concrete floors may include installation in floors consisting of fluted or corrugated steel deck topped with structural concrete, provided that (1) the concrete topping thickness measured above the top plane of the steel deck is equal to or greater than the minimum concrete thickness specified in the joint system, and (2) the joint system does not require any portion of the forming material or fill material to extend below the bottom plane of the floor.”

Thanks Jay McGuire, FCIA Vice President, for submitting these topics. Look for more of these “Tech Shorts”, in firestopping and other fire-resistance-rated construction issues, in future issues of *Life Safety Digest*.

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# FIRE, SMOKE AND COMBINATION FIRE/SMOKE DAMPERS

## Knowing the differences makes all the difference in properly specifying life-safety dampers

### POST-INSTALLATION GUIDANCE

When specifying life-safety dampers, engineers need to consider how the dampers will be inspected. Each fire, smoke and combination fire/smoke damper is required to have an access door for inspection and service. Chapter 7 of NFPA 105 and Chapter 19 of NFPA 80 cover operational testing and inspection immediately after installation, periodic inspection and testing, documentation and maintenance.

### CONCLUSION

The most effective life-safety plans include both active and passive forms of fire protection. Active fire protection is designed to suppress fire and aid the evacuation of occupants, while passive fire protection is designed to prevent the spread of smoke, toxic gases and flame. Through compartmentalization, passive fire protection:

- Facilitates occupant evacuation;
- Protects property;
- Minimizes property damage;
- Strengthens the effectiveness of active systems;
- Saves lives.

In both sprinklered and non-sprinklered buildings, the use of fire, smoke and combination fire/smoke dampers is a vital part of a properly designed life-safety system. In the event of a fire, the dampers help to confine flames and smoke to the compartment of origin, minimizing life and property loss while aiding the work of firefighters. 🔥

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## FCIA Firestop Industry Conference & Trade Show

Hyatt Regency Lost Pines  
Austin, TX  
November 6 - 9, 2018



**FCIA**  
2018

# CODES AND STANDARDS NEWS

## CODE CORNER

FCIA and many other organizations, code officials, fire marshals and interested parties participated at the ICC's Code Action Committee Hearings in Columbus, Ohio, in April. This is the second step in the process to the 2021 International Family of Codes. The first step was in January 2018 when proposals were submitted to the ICC. The next steps are public comments due in July, then another group of hearings in October followed by the Online Governmental Consensus Vote, finishing sometime in December.

Leading up to the hearings for the past 2 years, the ICC Board organized Code Action Committees, (CAC's) that have had conversations about several issues that needed longer discussion than the limited debate that takes place at the ICC Code Development Hearings.



At the Fire Code Action Committee (FCAC), both the FCIA and International Firestop Council (IFC) worked on the sections in the International Building Code (IBC) Chapter 7 on Joints. FCIA felt that the section on joints needed to state what the 'opening, breach, gap, void', was and then cover the treatment that maintains the fire-resistance. The IFC's Code Chair, Ed Goldhammer of Hilti, agreed with the philosophy and did that and more in a series of successful proposals on this area. Rich Walke of UL spearheaded the FCAC effort, with much industry participation during the two year period.

FCIA had several proposals in to continue the 'DIIM' philosophy that proper Design, Installation, Inspection and Maintenance of Firestopping results in better reliability and safer buildings. There is a monograph published at [www.ICCSafe.org](http://www.ICCSafe.org), Code Development, that has proposals organized by code and chapter. For the purposes below, FS=Fire Safety, Chapter 7 of the

IBC. S=Structural, and had proposals on Chapter 17, Special Inspections. F=Fire Code. Below are results of the hearing on the FCIA code proposals submitted:

**FS46 - Identification Systems.** In this proposal, FCIA submitted that labels should be required where firestopping is installed in fire-resistance-rated assemblies. The proposal had a definition for a 'Firestop Identification Device and listed the location of the label on the assembly or penetrating item. The proposal was disapproved narrowly, 8-6.

### SECTION 202 DEFINITIONS

#### - Add new definition as follows:

**FIRESTOP IDENTIFICATION DEVICE** A label or placard, of any type, that identifies the firestop system.

#### Add new text as follows:

**714.2.1 Firestop identification devices.** Penetration firestop systems shall be permanently identified with a device, label or other method. The device shall be handwritten with permanent ink, or pre-printed, legible tag or label, or format readable by an electronic device. The device shall be located on both sides of the fire barrier, smoke barrier or fire wall. The device shall at a minimum have the following information:

1. Listing system number or engineering judgement \_\_\_\_\_ number.
2. Date of Installations
3. Installing company name, contact information.
4. Manufacturer name of the firestop system.
5. "Warning, Penetration Firestop System - Do Not Remove or Tamper.

Adhesive or mechanically attached Identification devices shall be located within 6 inches (150 mm), of the penetration firestop system edge, on top of the horizontal assembly, 6 inches (150 mm) below or beside the firestop system. For multiple penetrations of the same listing number arranged within 6 inches (150 mm) of each other, the device shall be located centered under or within 6 inches (150 mm) to either side of the grouping. Hanging tags shall be attached to the penetrating item with permanent wire, string or plastic tie, within 6 inches (150 mm) of the assembly.

Adding identification systems - labels to assemblies with the design number, manufacturer, contractor, date and person's special identification, supports FCIA's 'DIIM'.

The System number is on the assembly, covering the **D-Design. I-Installation** is in accordance with the system number and manufacturers installation instructions. **The I-Inspection** takes less time due to having the system design number on the assembly - saves lookup time. Plus, the **M-Maintenance** can be better performed knowing the system number which identifies materials used in the assembly. From a barrier management perspective, this is the best way to tackle a very complex building life cycle problem from new to existing buildings.

**FS47 - FM & UL Firestop Contractor Programs in IBC** - This proposal would require FM 4991 Approved or UL Qualified Firestop Contractors for buildings 420' and higher. The proposal had very few opponents testifying against the concept. The discussion from the code committee was split for and against. The opponents had minor detail points that might be able to be addressed during the public comment period. This was defeated 9-5, which is not bad considering that this is such a new concept in the code.



**714.2 Installation.** A listed *penetration firestop* system shall be installed in accordance with the manufacturer's installation instructions and the listing criteria.

**714.2.1 Contractor qualifications.** In buildings that are 420 feet (128 m) or greater in building height, penetration firestop systems shall be installed by contractors qualified by Underwriters Laboratories (UL), Factory Mutual (FM), or an approved agency.

**Exceptions:**

1. Where the work is of a minor nature as approved by the building official.
2. Where the work is a repair or Alteration Level 1 as defined by the International Existing Building Code.

**715.2 Installation.** A *fire-resistant joint system* shall be securely installed in accordance with the manufacturer's installation instructions and the listing criteria in or on the joint for its entire length so as not to impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.

**715.2.1 Contractor qualifications.** In buildings that are 420 feet (128 m) or greater in building height, fire-resistant joint systems shall be installed by contractors

qualified by Underwriters Laboratories (UL), Factory Mutual (FM) or an approved agency.

**Exceptions:**

1. Where the work is of a minor nature as approved by the building official.
2. Where the work is a repair or Alteration Level 1 as defined by the International Existing Building Code.

**S21 - Special Inspection for Firestopping at Residential Occupancies with occupant load >250** - This proposal submitted by FCIA was **APPROVED AS SUBMITTED** with a vote of 13-0 from the ICC Fire-Safety Committee.

**[BF] 1705.17 Fire-resistant penetrations and joints.** In high-rise buildings or, in buildings assigned to *Risk Category III or IV, or fire areas containing Group R occupancies with an occupant load greater than 250, special inspections for through-penetrations, membrane penetration firestops, fire-resistant joint systems and perimeter fire barrier systems that are tested and listed in accordance with Sections 714.4.1.2, 714.5.1.2, 715.3 and 715.4 shall be in accordance with Section 1705.17.1 or 1705.17.2.*

The occupant load factor came from the Table 1604.5, which is already referenced in the code through the Category III and IV buildings referenced in the table. Committee comments were, "This will actually reduce the cost of construction...eliminating issues in the field", and that "This reduces variability".

**FS49** - This proposal dealt with Dissimilar Material transitions from plastic pipe to metal at the barrier, then back to plastic 6" past the assembly, was **DISAPPROVED**. The proposal, from the Washington Association of Building Officials (WABO) would have reduced the distance from the barrier from 'as required to maintain the rating of the assembly' to 6" past either side of the assembly. FCIA committed to work with WABO to provide input to a workable public comment.

**F90 - Maintaining Protection** - FCIA was also successful with a proposal to add in the International Fire Code, (F=International Fire Code). 704.1, Maintaining Protection, that where required when the building was originally constructed, that repairs would be performed using tested and listed firestop systems and manufacturer's installation instructions.

There were fourteen different proposals in the subject of **Tall Wood Buildings** using three types of heavy timber and increases in heights of these buildings.

The Tall Wood Building proposals were submitted by the ICC's Adhoc Committee on **Tall Wood Buildings**. Using protected wood components, the code proposal meant that a gypsum encapsulated wood assembly might be built up to 18 stories high, up from the current allowable 6 stories.



## CONFERENCE & EXPO



JUNE  
11-14  
2018

# LAS VEGAS

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The world's biggest and most comprehensive **fire, electrical, and life safety** event.

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Opposition was from the Steel, Concrete Industries and the Fire Service. The Fire Service mentioned that they were concerned with fighting a fire in a high-rise building where the structural elements are combustible. The series of proposals including an 18-story wood structure was APPROVED by the code committees. Look for public comments on this subject to be heard at the Richmond VA Public Comment Hearings this October.

The **metal panel industry** submitted a proposal dealing with Metal Composite Material (MCM) Panels. The proposal removed the unlimited height exception in the Code for MCM used on the exterior of buildings without more rigorous testing when the building is fully sprinklered. This proposal was APPROVED AS SUBMITTED.

Another APPROVED proposal **F263** requires the owner of a building under construction to designate a fire prevention program superintendent who is responsible for performing daily fire inspections at the construction site. Plus, **F264** clarified the role and training requirements for fire watch personnel and now requires a fire watch both when the construction exceeds 40' above lowest grade level for multistory buildings where any story exceeds 50,000 SF. Previously, it was based on height alone. Also, proposal F268 addressed minimum fire flows for construction sites for Type III, IV and V construction.

From the National Fireproofing Contractors Association (NFCA), several proposals were presented. In **FS10**, the change attempted to change the words Intumescent Fire-Resistant Coatings to Intumescent Fire-Resistant Materials (IFRM's) in Chapter 2. The proposal also added in Chapter 7 a section on IFRM's. It was DISAPPROVED as the section needs more refinement to reflect the unique needs of IFRM. The Committee voted 8-6 against the proposal. That's pretty good, considering NFCA was putting in a completely new section.

In Fireproofing Special Inspection, proposals **S14**, **S15**, and **S16** by the NFCA were APPROVED AS

SUBMITTED. The proposals changed the Chapter 17, Special Inspection code requirements from 'inspect after rough installation of mechanical, electrical and plumbing' to a process that reflects how inspection is currently performed. The new language approved has special inspections occurring during construction before the fireproofing is concealed and states that an additional visual inspection takes place before the ceilings are installed. Proposal **S19** did the same thing for the IFRM Inspections.

Another proposal, **S16**, APPROVED AS SUBMITTED, added a maximum level of inspection (110% of that specified in the standards) that also did not limit inspections when violations occur, as is specified in the fireproofing inspection standards. Finally, the NFCA also submitted a section to the **International Fire Code** specifically for SFRM and IFRM Fireproofing as well. This was disapproved but had great support from the code committee and statements that this is a good addition to the code.

Of interest, was **FS1**, regarding the language in 703.2 on fire-resistance ratings. This section clearly states that the building elements need to pass ASTM E 119, UL 263 tests without an 'assist' from a sprinkler assembly. The fire-resistance industry including Bill Koffel, Koffel Associates, worked with the consultant from Tyco Fire Products to create language acceptable to both the sprinkler and fire-resistance industries as well as the code committee.

ICC's Report on the Hearings is due out shortly with Public Comments due in late July. Then, a Public Comments are due July 16. A Public Comment Monograph of all the comments is published sometime in late August, early September, and heard at the hearings October 24-31, Richmond, VA. The online governmental consensus finishes sometime in December, resulting in publication of the codes in mid-2019. Watch future issues of Life Safety Digest for reports as the process continues.

## NFPA 101/5000 PROCESS STARTING

NFPA's development process starts this June with public inputs for the Code Committees to review. A meeting is scheduled for late July in Minneapolis to

review proposals. Watch the next issue of *Life Safety Digest* for reports on the process.







## CANADA'S NBC DEVELOPMENT PROCESS MOVING

The National Building Code of Canada development process is managed by the National Research Council of Canada, a government organization. This is a different model than the International Code Council and NFPA's not for profit organization status. Regardless, the processes all have input from governmental and industry individuals and organizations.

While the ICC and NFPA codes are on a 3-year code development cycle, the National Building Code of Canada (NBC) code development process is on a 5-year cycle. The next code for the NBC is the 2020 version of the NBC. Provinces and municipalities adopt the code, sometimes with amendments.

FCIA is participating in the National Building Code of Canada Code Development process as well. We have proposals in the cycle for adding the **FM 4991, Standard for the Approval of Firestop Contractors and the ULC Qualified Firestop Contractor Program**, inserting the **ASTM E 2174 and ASTM E 2393 Firestop Inspection Standards** into the code, and adding **annual visual inspection of existing fire resistance including fire-separations**.

FCIA has participated in several teleconferences on the NBC and NFC proposals, and there seems to be some support for the concepts. On the **annual visual inspection of fire-separations**, it seems the code committee does not believe there is a problem with existing buildings. FCIA members disagree and have sent pictures showing how existing buildings need ongoing fire-resistance reviews, just like sprinklers and alarms.

**FCIA's Canada Chair Jim Smiley's** is the proponent for the FCIA proposals and he's been following them closely along with FCIA's office. More as the process gets deeper into reviewing these proposals.

Additionally, the **NFCA National Building Code of Canada Proposals** submitted include adding mandatory inspection of newly installed SFRM and IFRM Fireproofing as well as attention to fire-resistance of roof assemblies. 🔥



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# MEMBERSHIP HAS ITS PERKS...



## ADVOCACY

One of the guiding principles of FCIA is for the member organization to be recognized throughout the construction industry as preferred quality contractors of life safety firestop systems. FCIA's efforts to this end have resulted in building the FM 4991 Approved and UL/ULC Qualified Contractor Programs to give Firestop Contractors great advantages. FCIA was the code proponent to put Special Inspections for Firestopping into the 2012 International Building Codes. The group also worked to add the FM & UL Firestop Exams to International Accreditation Services IAS AC 291. FCIA's efforts have resulted in specs for FM 4991, UL/ULC QFC Programs, IAS AC 291, thereby building acceptance of the specialty firestop contractor and inspection concept in the construction industry.



## EDUCATION

With two annual conferences and various symposiums, webinars and presentations throughout the year, FCIA's commitment to education runs deep. The group's Barrier Management Symposium, produced in conjunction with ASHE, UL and The Joint Commission, have been educating groups about the importance of Firestopping nationwide. FCIA's FREE Webinar series covering the "DIIM" of Firestopping hosts thousands each year. Through all this, together with their Firestop Education Programs, the group's commitment to education remains strong.



## SUPPORT

From simple to complex questions, FCIA Leadership, Staff and Consultants, have the knowledge and experience to serve you. Because of our relationships at CSI, ASHE, CSC, AIA, ICC, NFPA, and many other organizations, there are endless resources to serve members. And, with several different membership types, there's certainly a membership level perfect for you.



## NETWORKING

Meet and develop working relationships with Firestop and Effective Compartmentation professionals from around the globe. Events are held all over the world and are routinely attended by peers and industry influencers, as well as occasionally hosting potential clients. Put the FCIA network to work for you.

**You've invested in your company. FCIA has invested in building your industry.**

Join the team that's dedicated to raising awareness of and promoting the Specialty Firestop and Effective Compartmentation industry.

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# INDUSTRY NEWS

## FIELD ENGINEERING ANNOUNCES NEW FIRESTOP INSPECTION SERVICE

UL Field Engineering recently announced the launch of its on-site firestop inspection service.

In the 2009/2010 Code Development Process, FCIA was the code proponent for the successful proposal that added to Section 1705 of the 2012 and later editions of the International Building Code (IBC) special inspection of firestop systems, fire-resistant joint systems and perimeter fire containment systems in certain types of buildings. Based on the proposal, special inspection is now required for firestopping installed in high-rise buildings and in buildings defined as Risk Category III or IV in Table 1604.5 of the 2012, 2015, and 2018 International Building Code.

The proper installation of these critical life safety systems helps protect the building and its occupants against the spread of fire, heat, smoke and toxic gases should a fire occur. "Proper installation of these systems is crucial to maintaining the integrity of fire-resistance-rated assemblies and, ultimately,

to the protection of life and property" said Rob Keogh, Business Development Director of UL Field Engineering.

"UL is excited to partner with building owners, contractors and Authorities Having Jurisdiction to ensure that these important systems have been installed in accordance with the requirements of the Listed systems."

"By combining UL's rich history of participating in Codes and Standards development, more than a century of testing and certification of building materials and our extensive field network, UL is uniquely positioned to deliver this service" adds Ruben Sandoval, Field Engineering Manager at UL.

To find out more, visit [www.ul.com/firestopinspection](http://www.ul.com/firestopinspection) or call 480.290.6987



## FCIA PARTNERS WITH NFPA CONFERENCE & EXPO

The National Fire Protection Association (NFPA) hosts its annual Conference & Expo at Mandalay Bay in Las Vegas, June 11 - 14. This comprehensive event brings together thousands of the industry's leading professionals.

This year's expo, which features over 350 exhibitors, more than 110 educational sessions and special events, focuses on technology's role in our world. "The Building

of the Future" expo, a virtual reality simulation, gives attendees a glimpse into the future complete with smart building and vehicle electrification.

For more information, visit [nfpa.org](http://nfpa.org).



## NEW EDITION OF MANUAL COMING THIS FALL



The Gypsum Association's flagship publication, GA-600 *Fire Resistance and Sound Control Design Manual*, is revised every three years by a committee of industry experts on the proper specification, installation and use of gypsum panel products in systems tested for fire and sound mitigation. Technical expertise is

drawn from across the Gypsum Association's membership. Scheduled for release this fall, GA-600-2018 will be the 22nd edition of the *Manual*. In addition to the expanded acoustical information including a section of terminology specific to sound control as well as a set of General Explanatory Notes specific to sound control design, the book will be reformatted to more clearly distinguish design differences between the fire-tested assembly and the sound-tested assembly.

Gypsum Association Image

## GYP SUM ASSOCIATION RELEASES TRANSLATED TECHNICAL DOCUMENTS

The Gypsum Association has translated four publications into both Canadian French and Spanish. GA-216, *Application and Finishing of Gypsum Panel Products* is referenced in the International Building Code as an appropriate standard for the application and installation of gypsum boards and

panels. French and Spanish copies of the specification may be purchased through the GA's bookstore at

[www.gypsum.org](http://www.gypsum.org).

## USG INTRODUCES ULIX TYPE C PANEL REPLACEMENT FOR WALLS, COLUMNS AND CEILINGS

USG Corporation recently announced the extensive fire performance evaluation completed by Underwriters Laboratories Inc. (UL).

The analysis illustrates that the industry's first lightweight and sustainable wallboard, USG EcoSmart Panels, is specifiable for more than 260 fire-resistance-rated wall, column, floor - and roof-ceiling UL system designs in which Type C panels are mandated.

The testing concluded that five-eighths inch (15.9 mm) USG Sheetrock® Brand EcoSmart Panels Firecode® X (UL Type ULIX™) and USG Sheetrock® Brand EcoSmart Panels Mold Tough® Firecode® X (UL Designation Type ULIX™) is specified in more than 260 fire-rated wall, column, and floor-and roof-ceiling UL designs in which Type X or Type C panels are required.

In addition to applications that require a Type X wallboard, these panels can also be installed in the most widely-specified wall, column and ceiling assemblies as an alternative to Type C panels due to the new innovation.

However, there are still some Type C UL Designs that are not interchangeable with the new Firecode® Type X EcoSmart® Panels. Fire-resistance-ratings might not be the same as Firecode® Type C in all cases for the new EcoSmart product.

USG Sheetrock® Brand EcoSmart Panels Firecode® X are available nationwide in five-eighths inch (15.9 mm) thickness and are offered in two core formulations for both fire- and non-fire-rated applications.

For more information, visit [usg.com/eco](http://usg.com/eco).

## NEW HORIZONTAL GLAZING ASSEMBLY

SAFTI FIRST announced that the United States Patent and Trademark Office has officially awarded US Patent Number 9,926,709 to the GPX FireFloor System.

USA-made, the GPX FireFloor System is listed and labeled by Intertek and UL up to 2 hours and offers the largest tested and listed individual panels for fully supported and butt-glazed glass floor applications.

The GPX features a single glass unit comprised of custom SuperLite II-XL fire resistive glass combined with a tempered laminated walking surface that is top-loaded into a structural steel fire rated framing grid. The GPX FireFloor system's

design includes provisions for bomb-blast and seismic resistance and is adjustable for sloped drainage if required.

SAFTI FIRST provides both the glass and structural steel framing structure for a complete fire resistive glass floor system. The GPX FireFloor System can be used in both interior & exterior applications with multiple glass make-ups and frame finishes.

For more information on the GPX FireFloor System, visit [www.safti.com](http://www.safti.com).

## NEW DHI FIRE DOOR ASSEMBLY COURSE

The Door and Hardware Institute has created a new course to help Fire Door Assembly Inspectors (FDAIs) grow their inspection services and build an inspection team.

*DAI300: Fire Door Assembly Inspection* will be taught in-house at the inspection agency office by credentialed FDAIs to train employees to conduct in-field inspection of fire doors, under the supervision of an FAI credentialed inspector.

This course provides the technical knowledge and

expertise to assist and support credentialed inspectors of swinging fire doors through all phases of the inspection process. Check out DHI Canada's offerings too for Fire Door Inspection programs.

For more information, visit [www.dhi.org/DAI300](http://www.dhi.org/DAI300), email Valerie Gardner at [vgardner@dhi.org](mailto:vgardner@dhi.org).



## NCMA TURNS 100

NCMA Turns 100 - This year marks the National Concrete Masonry Association's (NCMA's) 100-Year Anniversary. The milestone gets celebrated at the summer Midyear Meeting in Chicago, July 31 - August 3, 2018. A banquet will be held at the historic InterContinental Hotel on Wednesday, August 1. Congrats to NCMA on this achievement. <https://ncma.org>



## ASHE BLOG & BARRIER MANAGEMENT

There seems to be some chat going on about policies at healthcare facilities. One topic that comes up frequently is 'Above Ceiling Permits' and 'Barrier Management Policies'. These very related items are critical for managing fire-resistance-rated and smoke resistant assemblies in healthcare

occupancies. Need to find a contractor that can help with these policies? Visit [www.FCIA.org](http://www.FCIA.org), Barrier Management Services Section. It's new and already has FCIA Members that specialize in this discipline.

## FCIA 'DIIM'

The FCIA has developed a complete package for the 'DIIM' by working with the Contractor members, Manufacturers and Consultants to build meaningful standards, approvals and qualifications for firestop installation. The 'DIIM' for firestopping results in installations that match the tested and listed design listings and manufacturers' installation instructions not just at installation, but for the building's complete life-cycle. We believe provides reliable fire and life

safety when called upon by fire.

At the ICC Code Development Hearings, FCIA proposed code requirements for three of the DIIM pieces, the I-Installation, I-Inspection, and M-Maintenance. Check out the discussion in this issue of Life Safety Digest, in the Code Corner.

## FCIA MOP EXPANSION

FCIA's Firestop Manual of Practice (MOP) has a new chapter. The FCIA Technical Committee announced a new chapter focused on special inspection for firestopping. Additionally, a new searchable table of contents has been released. And, the FCIA's Firestop Containment Worker Education Program includes a book, DVD with Videos, 22 PowerPoint Presentations, 22 Instruction Outlines, 22 Quizzes for instructor delivered staff training. FCIA Members get

updates to the MOP for free upon request. Non-members can buy the FCIA MOP document for \$895US, members \$295US.

Email [info@fcia.org](mailto:info@fcia.org) for info on the worker education program. Visit [www.FCIA.org](http://www.FCIA.org) for info.



## FCIA & CANADA'S NATIONAL MASTER SPECIFICATION

FCIA worked with The National Research Council of Canada on a new National Master Specification for Government Buildings last fall. The result is that the 'DIIM' - proper design, installation for Firestopping is part of the Canada National Master

Specification. the spec will be published sometime this summer. We appreciated the opportunity to work with the NRC on this important document.



ICC Image

## IAS PRESIDENT'S RETIREMENT

The International Code Council paid tribute to International Accreditation Services President, Chuck Ramani on

his retirement recently. Many ICC and Code Development, Accreditation Industry Leaders including CEO Dominic Sims, ICC President Jay Elbettar, IAS Board Chairs Jim Toscas and Rocco Davis, and many others attended the event. FCIA's Executive Director, Bill McHugh was in attendance as well representing our industry at this great celebration.

## NEW NFPA ACTIVE SHOOTER/HOSTILE EVENT STANDARD

Laura Frye, AHC, DHT, CSI, CDT, CCS, FDAI, Director of Education and Certification with DHI in Chantilly, VA, is part of the team that developed NFPA 3000™ (PS), Standard for an Active Shooter/Hostile Event Response (ASHER) Program - the world's first standard to help communities develop a unified active shooter/hostile event planning, response and recovery

program. The National Fire Protection Association (NFPA) released the new standard to help policymakers, first responders, and others organize, manage, communicate, and sustain a holistic active shooter/hostile event preparedness program.

## FCIA IN THE MIDDLE EAST

FCIA's Education for the FM and UL Firestop Exams drew large audiences in Dubai, United Arab Emirates and also Doha, Qatar. Over 40 people attended with many passing the exams, the first step to FM 4991 Approval or UL Qualified Firestop Contractor Status.

Need to get educated? Watch for the next education

sessions at FCIA's Firestop Symposium in Winnipeg, MB, Canada, FCIA's Firestop Industry Conference & Trade Show, and other FCIA Symposiums and Webinars. Need to get it done sooner? Contact [Cathy@FCIA.org](mailto:Cathy@FCIA.org) for how we can work together to get this done.



FCIA in Doha - FCIA Image

## FCIA ECA CONFERENCE A BIG SUCCESS

FCIA's Education and Committee Action Conference in Memphis was a blast. Great speakers, educational opportunities, over 30 people taking the FCIA Education for and the FM and UL Firestop Exams, about 150+ participating, and some great relationships formed. The committee meetings were the most active seen in the past few years. Want to be part of the action? Don't miss FCIA's Firestop Industry Conference and Trade Show in Austin, TX, Nov. 6-9, 2018.



FCIA's Education & Committee Action Conference.  
FCIA Photo

## FCIA AWARDS SCHOLARSHIPS

FCIA's Scholarship Committee awarded \$2,000 in scholarships to Joshua Yates of Oklahoma State University and also Joseph Dowling at the University of Maryland.

Each receives \$1,000. Congrats to these young people, from the FCIA.

## ANSI CELEBRATES 100 YEARS



This voluntary standards coordination organization celebrates 100 years of standards and conformity assessment.

Check out their video gallery at <https://youtu.be/2EFJatfXSRg>.



## NEW ICC GLOBAL SERVICES VP

New ICC Global Services VP - The International Code Council continues its leadership role by naming Judy Zareski as Vice President, Global Services. In this new position, Zareski will

represent the Code Council internationally and develop global interest in the association, the International Codes (I-Codes), and other ICC products and services. 🔥

Judy Zareski.  
ICC Image

# FCIA INDUSTRY CALENDAR

## JUNE

### June 11-14

NFPA Conference & Expo  
Las Vegas, NV  
[www.NFPA.org](http://www.NFPA.org)

### June 21-23

AIA Conference on Architecture  
New York, NY  
[www.ConferenceonArchitecture.com](http://www.ConferenceonArchitecture.com)

### June 23-26

BOMA International Conference & Expo  
San Antonio, TX  
[www.BOMA.org](http://www.BOMA.org)

## JULY

### July 15-18

ASHE Annual Conference and Technical Exhibition  
Seattle, WA  
[www.ASHE.org](http://www.ASHE.org)

## AUGUST

### August 3-5

APPA Conference and Exhibition  
Washington, D.C.  
[www.APPA.org](http://www.APPA.org)

### August 13-15

National Association of State Fire Marshals Conference  
Park City, UT  
[www.FireMarshals.org](http://www.FireMarshals.org)

## SEPTEMBER

### September 16-18

Canadian Healthcare Engineering Society (CHES) Annual Conference  
St. John, NF  
[www.CHES.org](http://www.CHES.org)

### September 20-21 (tentative)

FCIA Canadian Symposium  
Winnipeg, MB  
[www.fcia.org](http://www.fcia.org)

## OCTOBER

### October 3-5

International Facility Managers Association (IFMA) World Workplace  
Charlotte, NC  
[www.worldworkplace.IFMA.org](http://www.worldworkplace.IFMA.org)

### October 3-5

CSI CONSTRUCT  
Long Beach, CA  
[www.ConstructShow.com](http://www.ConstructShow.com)

### October 21-24

ICC Annual Conference and Public Comment Hearings  
Richmond, VA  
[www.ICCSAFE.org](http://www.ICCSAFE.org)

## NOVEMBER

### November 6-9

FCIA Firestop Industry Conference & Trade Show  
Austin, TX  
[www.FCIA.org](http://www.FCIA.org)



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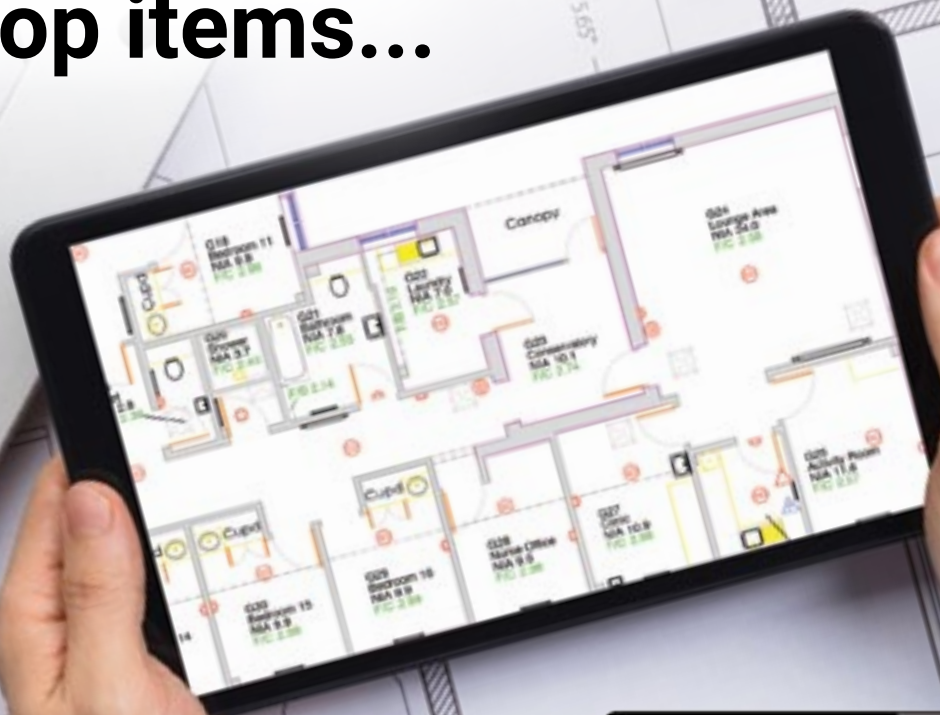


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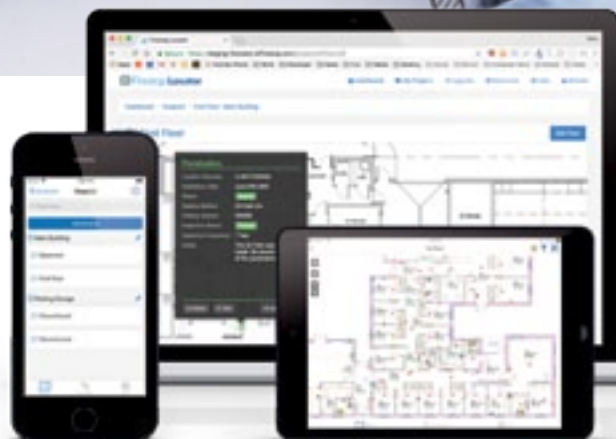


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