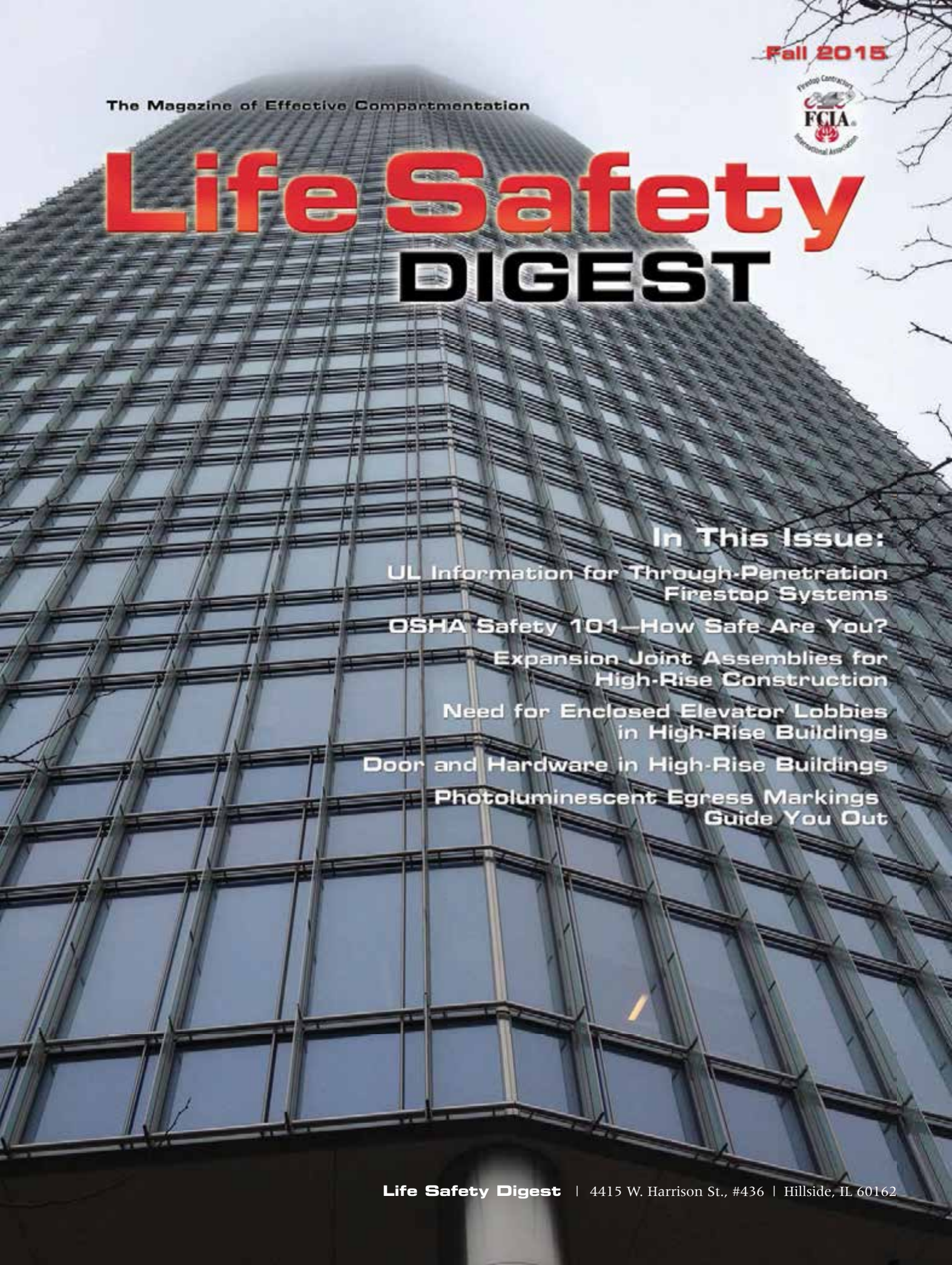

Fall 2015

The Magazine of Effective Compartmentation

Life Safety DIGEST

In This Issue:

Life Safety Digest | 4415 W. Harrison St., #436 | Hillside, IL 60162

Glazing Contractor: Architectural Glass Works
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Due to its location on a compact city lot, Jones Prep was built vertically over seven floors. To enhance the student experience in such a tall building, the team integrated FireLite Plus® fire-rated, safety-rated glass ceramic from Technical Glass Products throughout the design. This allowed light and openness to fill the school, while providing superior fire and impact protection.

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On the Cover: The Devon Energy Building, located in Oklahoma City, OK. Balco supplied expansion joint covers to accommodate thermal and seismic movement of the high-rise structure.

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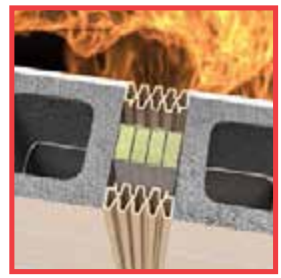

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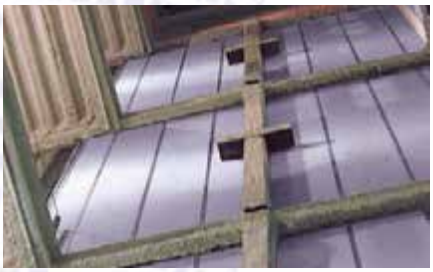

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Editor's Message

At FCIA, we believe that it takes **all types of fire protection** to make a safe building. Fire-resistance-rated and Smoke-resistant construction and Compartmentation provide safety, but that's not all. Detection and alarm systems, coupled with building staff that notify occupants of true and false alarms, are needed to start the process of *occupant exiting through the egress system*. The sprinkler system will suppress the fire until firefighters arrive. And, most importantly, proactive education for building occupants on the importance of heeding the emergency warnings immediately, to not finish that email, phone call, etc., and exiting the building quickly and efficiently upon hearing notification that something is happening in the building.

In the marketplace, we hear that only one type of fire protection results in a safe building. FCIA believes that it is more than just one fire protection feature that makes a safe building.

There are roughly 11,000 buildings 20 stories and higher in North America. Of the 11,000, 70% are located in Chicago, Los Angeles, San Francisco, Honolulu, New York and Toronto. In Chicago, New York and Toronto, there is a large stock of older buildings where fire-resistance-rated construction and compartmentation were the primary means of defense against fires. In Los Angeles, San Francisco and Honolulu, there are additional Acts of God to account for, such as earthquakes. These are known to cause power loss, possibly compromising potential fire protection measures, leaving fire-resistance and compartmentation as the primary means of fire protection.

Therefore, looking at this 'High-Rise' building occupancy, it can be said that all types of fire protection provide for a safe building as this occupancy is constantly shown to be safe. Did detection and alarms, occupant education and sprinklers help make the building safe? The answer is an unequivocal "Yes" to all.

This issue dives into the various components of high-rise buildings. From photoluminescent markings in stairwells to help make it obvious and intuitive when the lights go out during egress, to elevator lobbies, firestopping and doors and hardware, we've assembled articles meant for high-rise buildings.

FCIA believes high-rise buildings are safer due to the 'DIIM' of Effective Compartmentation (Design, Installation, Inspection, and Maintenance-Management).

Enjoy this issue of *Life Safety Digest*, and thank you for your continued support of the magazine.

ANSI UL 1479—What Does the UL Guide Information Say for Through-Penetration Firestop Systems?

EDITORS NOTE: The information below is copied directly from the UL Guide Information found at www.UL.com under Online Certifications Directory, Fire Resistance. Under certain paragraphs, will be editors notes highlighting specific issues. There is a lot more to this description, which we'll cover in the next issue of Life Safety Digest.

This category covers firestop systems, which are specific constructions consisting of a wall or floor assembly, a penetrating item passing through an opening in the wall or floor assembly, and the materials designed to prevent the spread of fire through the openings. The specifications for materials in a firestop system and the assembly of the materials are details that directly relate to the established ratings. Information concerning these details is described in the individual systems. The hourly ratings apply only to the complete systems. Individual components are designated for use in a specific system to achieve specified ratings. The individual components are not assigned ratings and are not intended to be interchanged between systems. Additionally, the substitution or elimination of components required in a system should not be made unless specifically permitted in the individual system or in these general guidelines.

The firestop systems covered under this category have been investigated with a positive furnace pressure differential of at least 0.01 in. of water maintained at a distance of 12 in. below horizontal test assemblies and 0.78 in. below the fill materials surrounding the penetrating items passing through vertical test assemblies. The Classifications of firestop systems contemplate installation in heated and air conditioned environments unless stated otherwise in the description of the system.

FCIA NOTE: Notice that in the last two paragraphs the emphasis is that materials used together in a specific construction assembly build a "System". All fire-resistance is built on this premise. The System - assemblage of materials used in the firestop - gets the rating, not the products alone.

ANSI/UL 1479, "Fire Tests of Through-Penetration Firestops," defines the criteria for hourly F, T, L and W ratings for firestop systems.

The F-rating criteria prohibit flame passage through the system and requires acceptable hose-stream test performance. The T-rating criteria prohibits flame passage through the system and requires the maximum temperature rise on the unexposed surface of the wall or floor assembly, on the penetrating item and on the fill material not to exceed 325°F (181°C) above ambient, and requires acceptable hose-stream test performance.

FCIA NOTE: Notice that the F- (Fire or Flame Passage) & T- (Temperature) Ratings are both stated in the same paragraph. That may be due to the fact that they both require passing the Hose Stream Test. The Hose Stream Test assesses the effects of thermal shock and the impact of things like the ceiling tile dropping and hitting an object or hitting the system and possibly jarring it loose, which could allow fire spread. For the T- Rating, Temperature Rise of not to exceed 325°F (181°C) above ambient, helps keep the penetrating item from conducting enough heat to catch combustibles stored near the penetrating item from catching fire without flame ever actually poking through the assembly.

The L-rating criteria determines the amount of air leakage, in cu feet per minute per square foot of opening (CFM/sq ft) or in cu feet per minute per unit (CFM/unit) for fixed-size opening units, through the firestop system at ambient and/or 400°F air temperatures at an air-pressure differential of 0.30 in. W.C. The L ratings are intended to assist Authorities Having Jurisdiction and others in determining the suitability of firestop systems for the protection of penetrations and miscellaneous openings in floors and smoke barriers for the purpose of restricting the movement of smoke in accordance with ANSI/NFPA 101, "Life Safety Code."

FCIA NOTE: The L- Rating, or Air Leakage Rating, is the industry's suitability for use statement of firestop products used in smoke barriers and smoke partitions. The question frequently comes up, "What do we do with non-fire-rated assemblies that ask for smoke resistance"? The L- Rating is the industry's agreed upon rating for smoke. Non-rated walls are built similar to a rated wall, and ask for continuity of smoke resistance. If the wall is built similar to a fire-resistance-rated wall, but is not rated, the closest approximation from the firestop perspective we have is an L- Rating. The difference is that the wall has no fire-rating. What should be used to protect penetrations and joints against smoke spread in a smoke partition? If the industry has tested products in assemblies for smoke resistance using the L- Rating, then that's the closest we have and an L- Rated Firestop should be used in a smoke partition, not hourly rated, to give the best performance possible. Otherwise, without the L- Rating, we have no idea what protection has been afforded building occupants. Also, note that UL 1479 is the only test standard with the L- Rating. ASTM E 814 does not yet incorporate it into the standard. Therefore, FCIA recommends using materials referenced in L- Rated Firestop Systems for non-fire-rated partitions that require smoke resistance.

The Class 1 W rating determines the capability of the firestop system to maintain water tightness of the penetration through a floor or wall construction at ambient air conditions under 3 ft of water pressure head (1.3 psi) for a period of 72 hours. The W rating may be applicable for building structures whose floors are subjected to incidental standing water and/or for buildings that house critical equipment as described in ANSI/NFPA 75, "Fire Protection of Information Technology Equipment," and ANSI/NFPA 76, "Fire Protection of Telecommunications Facilities."

FCIA NOTE: While the W- Rating is a great addition to UL 1479, FCIA will be working with others in the UL Standards Development Process to add that the products used in a W- Rating be tested after aging, movement, and should be exposed to the elements reasonably foreseeable to occur in buildings.

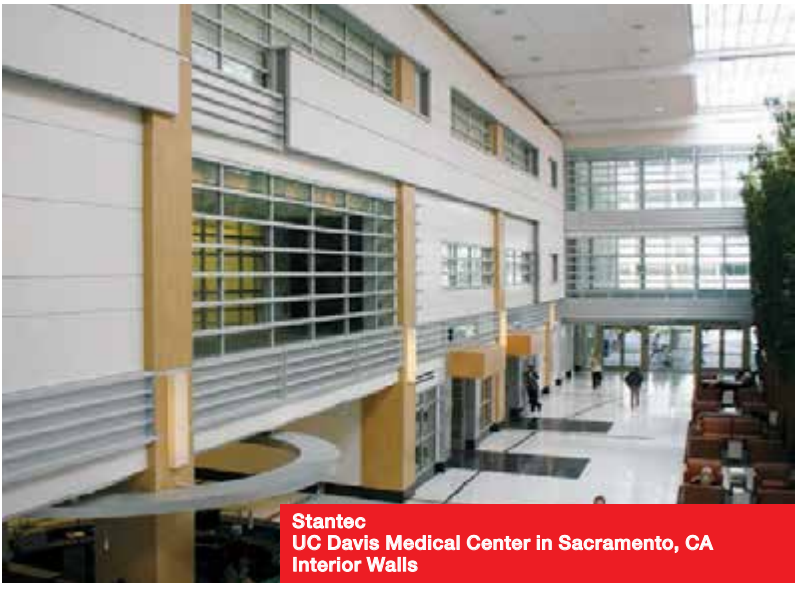
Acceptance is based upon the ability of the firestop system to withstand the applied pressure without the passage of any water through the firestop system. After the Class 1 watertightness test, the firestop system is conditioned in accordance with the requirements of ANSI/UL 1479 and the fire and hose stream tests described in the standard are conducted.

The W rating is intended to assist Authorities Having Jurisdiction and others in determining the suitability of firestop systems in applications where submersion in water may be a factor.

FCIA NOTE: This is going to be a series of articles from the UL Guide Information for Firestops. Italic print is FCIA's opinion and does not reflect UL's opinion in any way.

WHEN THE BEST WANT THE BEST!

SOM
UNC Genome Sciences Building in Chapel Hill, NC
Exterior Wall



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OSHA Safety 101: How Safe Are You?

By FCIA Staff

With the Occupational Safety and Health Act of 1970, Congress created the Occupational Safety & Health Administration, otherwise known as OSHA. This branch of the US Department of Labor is tasked with assuring safe and healthful working conditions for working men and women by setting and enforcing standards, as well as providing training, outreach, education and assistance to both employers and the workforce.

For the calendar year of 2014, the Top 10 most-cited agency violations were:

1. Fall Protection in Construction
2. Hazard Communication
3. Scaffolding in Construction
4. Respiratory Protection
5. Lockout/Tagout
6. Powered Industrial Trucks
7. Electrical – Wiring Methods
8. Ladders in Construction
9. Machine Guarding
10. Electrical – General Requirements

It is surprising to think that of the Top 10 at least half can be applied to the Firestop industry.

HAZARD COMMUNICATON

Hazard communication, #2 on the list above, is the method of communicating to employers and employees on information concerning the hazards of all chemicals produced or imported. Section 1901.1200(b)(2) specifically relates to "any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency." This easily prevented safety hazard can cause chemical burns, respiratory problems and worse – fire and explosions.

So, how can you educate workers to avoid failing to recognize chemical hazards?

As of June 1, 2015, OSHA has mandated the use of pictograms in hazardous chemical labels. In addition to the newly required pictograms, OSHA requires a signal word, hazard and precautionary statements, the product identifier and supplier identification information on hazardous chemical labels moving forward. Employers must train workers and staff on the Hazard Communication solutions outlined here:

- Maintain a Safety Data Sheet (SDS) for each chemical used;
- Make the SDS information accessible to all employees at all times in formats that all may understand, including languages;
- Follow the manufacturer's SDS instructions for handling the hazardous chemicals used;
- Train employees about the risks of each hazardous chemical used and how to clean-up spills appropriately and safely;
- Provide Spill Clean-Up kits in areas where hazardous chemicals are used;
- Follow the instructions on the SDS for the cleaning of accidental spills;
- Provide "Proper Personal Protective Equipment" and enforce its use;
- Store Chemicals safely and securely.

LADDER SAFETY

Something that can be found in largely all Firestopping installations and maintenance is the use of ladders. OSHA estimates that there are almost 25,000 injuries, and almost 40 fatalities, per year due to ladder and stairway hazards. In fact, nearly half of injuries were serious enough to require time off the job, adding to decreased productivity. **THESE CAN BE PREVENTED!**

Keep in mind the following to ensure proper ladder use and to reduce the dangers associated with these tools of the trade:

- USE THE CORRECT LADDER FOR THE TASK!
- Have a competent person visually inspect ladders before use for any defects, such as:
  - Structural damage, bent or missing rungs/ steps/cleats and missing or damaged safety devices
  - Grease, dirt of other contaminants that could cause slips or falls
  - Paint or stickers (except warning labels) that could hide defects

- Make sure the ladder is long enough to safely reach the work area;
- Tag damaged or defective ladders for repair or destroy them immediately;
- Do not load ladders beyond the maximum intended load, including the weight of the user plus any related materials and tools;
- Avoid using ladders with metallic components near electrical work.

ELECTRICAL SAFETY

Coming in at the end of the Top 10 list of OSHA violations in 2014 are Electrical Hazards. Like the dangers found in the Hazard Communication regulations, Electrical Hazards can be easily prevented. Failure to do so can result in burns, shocks, electrocution, and in extreme cases, even death. But again, these dangers can be avoided. Follow these best practices to ensure proper Electrical Hazard safety:

- Assume all overhead wires are energized at lethal voltages. Never assume that a wire is safe to touch, even if it is down or appears to be insulated.
- If working at heights or handling long objects, survey the area before starting work for the presence of overhead wiring. Stay at least 10' (3 meters) away from overhead wires.
- Never operate electrical equipment while standing in water.
- Never repair electrical wiring or equipment unless qualified and authorized to do so.
- Always use caution when working near electricity.
- Survey your job site every day to determine the location of overhead power lines, poles or wiring.
- Clearly mark boundaries to keep workers/ equipment at a safe distance from overhead wiring.

CONFINED SPACE RULE

OSHA is also adding a new subpart to provide protections to employees working in confined spaces in construction. Confined spaces are not intended for continuous occupancy. Not only are they extremely difficult to exit in an emergency situation, but people working in confined spaces face life-threatening hazards, including atmospheric and physical hazards. This new subpart replaces OSHA's one training requirement for confined space work with a comprehensive standard that includes a permit program designed to protect employees from exposure to many hazards associated with work in confined spaces.

The final rule is similar in content and organization to the general industry confined spaces standard, but also incorporates several provisions from the proposed rule to address construction-specific hazards, accounts for advancements in technology and improves enforceability of the requirements.

The final rule became effective on August 3, 2015.

In conclusion, the commitment to issues of life-safety is found not only in the systems installed by Firestop Contractors, but also in the field working conditions for the workforce. With consistent training and vigilance by the workforce, safe and efficient field working conditions can be the norm.

Visit www.OSHA.gov for more information.

Expansion Joint Assemblies for High-Rise Construction

By Steve Cooper

Expansion joint assemblies are designed to continue the design elements of a building across the gap or breach that is located between structural building components. The breach is designed into the structure to allow for movement related to weather, seismic and other events. Design elements like fireproofing, waterproofing, Ultra Violet (UV) resistance, sound transmission, aesthetics and many other features are intended to provide improved quality of life in modern high-rise construction.

Devon Energy Building (Balco Photo.)

Expansion joint assemblies are designed to accommodate all types of construction materials. They are also unique in that they accommodate the movement related to one building near an adjacent building that is separated only by this breach or gap.

High-rise construction has as many different construction material possibilities as there are companies to dream them up and manufactures to make them.

Likewise, expansion joint cover manufacturers make as many combinations of assemblies as there are building components available on the market. Expansion joint assemblies are components of every aspect of high-rise construction. Foundations, structural columns, floors, exterior walls and cladding, interior partitions and roof designs all have unique requirements and challenges when it comes to choosing a suitable expansion joint assembly to fill the breach or gap designed into the building.

Choosing a fire-rated expansion joint assembly can be complicated by the seemingly endless choices available on the market today, so here are a few tips to help you decide on the proper choices for your building.

- **Horizontal or Vertical Assemblies –** Decide if the fire-resistant-rated assembly will be a horizontal or vertical type construction. Typically, fire-resistant materials used in fire-resistant-rated expansion joint system assemblies are laboratory tested horizontally for floor and roof materials. Fire barriers defined by the International Building Code as vertical are therefore tested vertically as walls. Walls can be made of gypsum wallboard, concrete block, concrete and other materials that, when assembled to a tested and listed system, methods based on tests or the code, become fire-resistance-rated. Fire-resistant-rated ceilings are made from a variety of materials that can be similar to wall, floor or ceiling specific materials so they are tested in either horizontal or vertical assemblies, depending on the configuration, of the assembly. Floor and roof construction assemblies are commonly constructed of concrete or possibly a structural composite of concrete and metal or other materials.
- **Fire Rating –** Determine the hourly fire-resistance rating of the construction components adjacent to the expansion joint gap. These typically range from 1 to 4 hour construction. Then, decide on the gap size to be filled, joined, etc., with an expansion joint material. Expansion joint gaps 4 inches (102mm) or less are often drastically different designs than those for breaches or gaps larger than 4" and continuing up to 24 inches (610mm) or more.

There are numerous materials used to make expansion joint assemblies. There are three primary categories of materials that make up the entirety of expansion joint assemblies: metal, elastomeric and fire barriers. Fire barriers are divided into three subcategories: intumescent, insulative and pre-compressed foam.

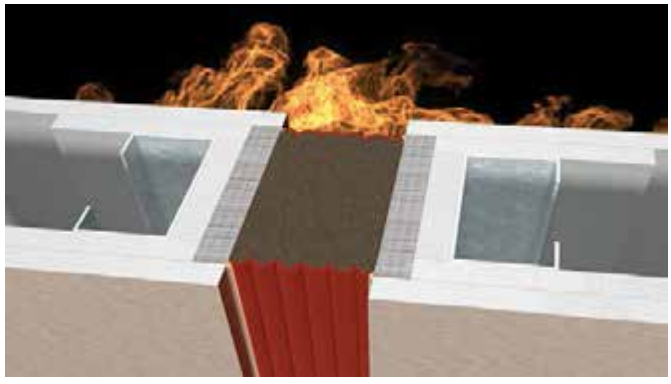
Metal expansion joint systems are often used for conditions of high volume traffic, heavy duty loads, industrial, clean environments and larger gap openings, as well as for providing particular aesthetic finishes. Adding attractive metals like stainless steel, bronze and anodized aluminum can make a boring expansion joint look like an architecturally intended design element.

Elastomeric expansion joint assemblies consist of a pre-formed rubber insert that is installed in the breach area to 'join' them together. These materials provide flexibility and color choices that are not available in metals.

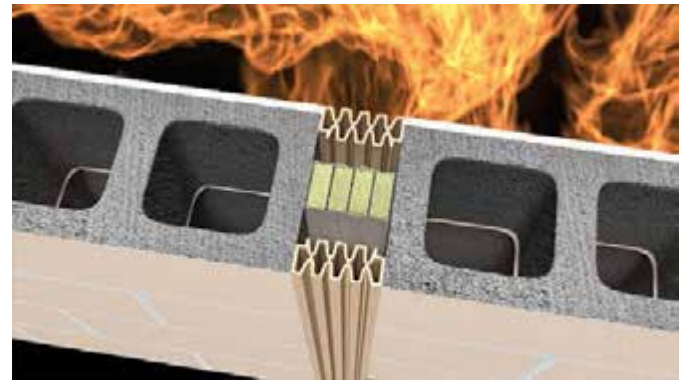
Fire barriers are either stand-alone complete–fire-resistance rated expansion joint assemblies, or they are components that compliment expansion joint covers made of metal or elastomeric materials.

Pre-compressed foam sealants used for breaches in assemblies are packaged to be slightly smaller than the specific joint size they are intended to be used in, yet will expand to several times the size of the breach area.

The manufacturers of compressed foam products go to great lengths to inform the installer that field verifying the joint size prior to ordering is essential to a good outcome, and that is for good reason. These systems are often very difficult to compress further than the packaging in the field if the joint is smaller than intended. This is particularly applicable if the temperature is cold. In hot temperatures, they can expand quickly, making them too large to install into the breach, or opening. These products are usually shipped in lengths of 5 to 6 ½ feet. That can lead to a lot of splice joints in tall walls, long floor runs and exteriors of high rise buildings.

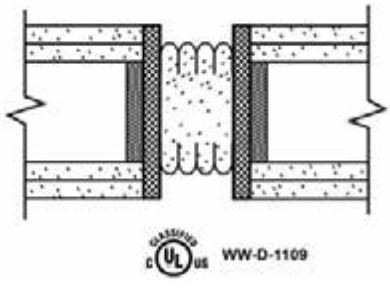


Pre-Compressed Foam Sealants (Balco Photo.)



Extruded Silicone Compression Seals with Intumescent Fire Barrier (Balco Photo.)

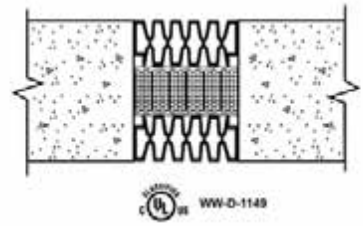
Pre-compressed foam systems, like the ones used as a part of the UL® Listing WW-D-1109, (shown below) are a single unit assembly that, when installed to the UL listing/design, become fire-resistance-rated. The product can come with a pre-coated silicone surface to provide a finished look with multiple color options. The simplicity of installing one system as a complete assembly is the appeal of this type of product in addition to movement capabilities, water-tightness and one sided application.



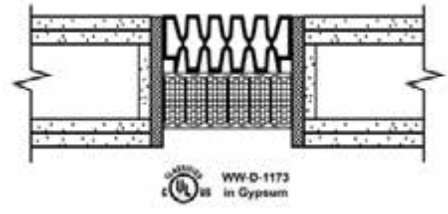
(Balco Image.)

However, as with many products, there are limitations with pre-compressed seal systems. Depending on the type of pre-compressed foam product chosen, they can be sensitive to installation in hot or cold temperatures. For example, temperatures below 40° F or above 90°F can affect the installation of these products. Working in these conditions also affects other products as well.

Extruded Silicone Compression Seals combined with an intumescent material, (as shown above) that expands with heat to form an insulating char are also available. These products are shown in the UL® listings WW-D-1149 and WW-D-1173 and are an alternative to pre-compressed foam seals. The extruded silicone compression seals can be shipped in lengths of 100 to 200 feet or more. Therefore, in most cases minimal - or no - splices are required in a high-rise building exterior or tall atrium.



(Balco Image.)



(Balco Image.)

But, this combination also solves numerous potential issues. These seals are more flexible than pre-compressed foam, allowing for a wider range and more forgiving installation due to field conditions that vary from the architectural plans. The exterior finish colors are the same for extruded silicone compression seals as they are for pre-compressed seals. However, the depth required for the combination of extruded compression seals and intumescent barriers is often shallower than pre-compressed foam seals. The depth is also field adjustable with this combination of products. The installation of these systems doesn't require mechanical fasteners or epoxies, so the installer needs minimal equipment for installation.

(Balco Image.)

Silicone compression seals as shown above require careful coordination for adhering wet silicone to the building materials for a water-tight installation.

Larger expansion joint assemblies intended for seismic movement may be too large for pre-compressed foam seals and extruded silicone seals with intumescent fire resistive material. Insulative fire resistive materials, like the one shown in the Intertek Listing BA_EJH 120-02 shown below, are commonly used in expansion joint gaps greater than 4 inches (102mm) to 24 inches (610mm) or more. Metal expansion joint cover systems and elastomeric expansion joint cover systems are used in combination with insulative fire barriers to create a complete fire rated expansion joint assembly. Metal expansion joint covers are usually shipped in 10 foot (3 meter) lengths.

(Balco Image.)

Elastomeric expansion joint assemblies typically have metal attachment components that are anchored to the structure, while the elastomeric portion is attached to the metal components. The visible elastomeric seals are typically shipped in lengths or 60 feet or more. Elastomeric assemblies can be made of many different types of materials like silicone, Santoprene™, EPDM or other materials.

Silicone is the most stable for exterior conditions because it has superior UV stability, more elasticity and more standard color choices than other materials. Silicone also splices easily in the field because it doesn't require heat welding. It can be spliced with liquid silicone.

The metal attachment components have some limitations as well. The materials must be ordered for the correct size of the breach and the intended movement of the buildings, which can vary from 50% to 100% of the gap size. An incorrect selection can have substantial cost impacts with metal systems. Metal, unlike elastomerics like silicone, can rust or oxidize over long periods of time. Concrete has to be finished smooth to accept the metal attachment components.

Conclusion

There are many different choices when it comes to fire rated expansion joint assemblies for high-rise construction. With a little knowledge and answers to the right questions, it is possible to make a good selection regardless of the type of construction, visual appearance or performance requirements in any particular building.

Steve Cooper, Vice President of Sales and Marketing, Balco, Inc. Steve is a graduate of the School of Engineering at Oklahoma State University and has over 25 years of product design, field installation training and executive management experience in the construction products and life safety industry. Steve can be reached at scooper@balcousa.com

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Door and Hardware in High-Rise Buildings

By Scott J. Tobias, AHC/CDC, CDT, CFDI, CSI, FDAI, LEED AP

(FCIA Photo.)

(Photo courtesy of Scott Tobias.)

One of my first thoughts when entering a high rise building today is: *How will I get out in an emergency and how long will it take?* Why a first thought you ask? Being born and raised in New York and having started my career in Manhattan, there have been many opportunities to experience all different types of high-rise buildings and their requirements for life-safety.

There have been many experiences with meetings near, or at the top of, a high-rise building anywhere from 50-100 floors high. The most frightful experience is climbing into an exterior, temporary construction elevator with a hard hat and 15 others waiting for their floor, so that they can walk out of the elevator and through a makeshift doorway in the side of the building where a wall will soon be.

NFPA 101-2015

NFPA 101 Life Safety Code 2015 section 3.3.36.7 defines a High-Rise Building as follows:

> *A building where the floor of an occupiable story is greater than 75 ft. (23 m) above the lowest level of fire department vehicle access.*

A story is typically ten feet between floors, so we are talking about buildings that are typically a minimum of six to seven stories to be classified as high-rise. Not to say a loft or other high ceiling construction might make the spaces much taller, thereby reducing the number of floors, but maintaining the 75 feet requirement of the code. Although six stories might not immediately be thought of as a high-rise, it makes sense to me as to why it would be classified so by fire department access.

International Building Code – 2015

The International Building Code 2015 (IBC) defines high-rise buildings similarly with slightly different language:

> *A building with an occupied floor located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access.*

Means of Egress

The means of egress is the path by which someone exits a building, and although high-rise buildings are referenced in Chapter 11 Special Structures and High-Rise Buildings of the NFPA 101 2015 Edition, this chapter only provides modifications to the means of egress provisions within the various occupancy chapters within the code. Likewise, each section or occupancy in the code refers back to Chapter 11 with the need to comply with that chapter's requirements, in addition to the occupancy requirements for high-rise buildings.

Section 3.3.172 defines Means of Egress as follows:

> *A Continuous and unobstructed way of travel from any point in a building or structure to a public way consisting of three separate distinct parts: (1) the exit access, (2) the exit, and (2) the exit discharge.*

These three parts of the egress are portions of any means of egress that respectively (1) leads to an exit, (2) is separated from all other spaces of the building or structure and (3) is the area between the termination of an exit and a public way.

Figure 1: Blocked means of Egress (Photo courtesy of Scott Tobias.)

In most cases, elevators are restricted from use in high-rise buildings in an emergency. This allows for not only firefighters and emergency personnel to get up to the floors necessary (if the elevators are operational), but also prevents congregating and waiting for the elevator, potentially getting stuck in the elevator on the way down – causing more harm, when one could be exiting

the building to safety. As such, a typical accessible means of egress is not possible, so the code requires areas of refuge for those that are unable to walk down stairs.

Section 3.3.172.1 defines Accessible Means of Egress as follows:

> *A means of egress that provides an accessible route to an area of refuge, a horizontal exit, or a public way.*

According to NFPA 101 2015, various occupancy types that might also be classified as high-rise are health care facilities, hotels, apartment buildings, lodging and room houses and board and care facilities. In order to accommodate very different construction means, NFPA 101 2015 separates the various occupancies by new and existing construction.

Figure 2: Clearly marked and lit Fire Door
(Photo courtesy of Scott Tobias.)

Additionally, emergency lighting is a very important part of the means of egress, so that in a power outage, especially at night, there is a way to see where you are going in order to make it safely to the exit, as quickly as possible. The code covers all aspects of the lighting system, including the placement, minimum illumination requirements and emergency generator and power supply requirements. An important component of the system is mentioned in section 7.9.2.7, stating that it has to have the ability to continuously operate or be capable of repeated automatic operation without manual intervention.

In addition to the emergency lighting helping to light the way for a means of egress, luminescent markings are also a necessary component of the exit to help guide us to safety. Section 7.2.2.5.5.6, Doors Serving Exit Enclosure, states:

> *All doors serving the exit enclosure that swing out from the enclosure in the direction of egress travel shall be provided with a marking stripe on the top and sides of the door (s) and frame (s).*

In addition to the marking stripe on the door, section 7.2.2.5.5.7 Door Hardware Marking also requires the marking stripe to be applied to the entire length of the actuating device while not interfering with the viewing of any instruction on the device.

One last requirement of the Door Hardware Marking section also requires that all doors serving the exit enclosure swing out from the enclosure in the direction of egress travel and have a four inch high minimum emergency exit symbol with a luminescent background.

Figure 3: Confusing Signage on Emergency Exit Door
(Photo courtesy of Scott Tobias.)

Sprinklers

Also, many new sprinkler requirements were added to many occupancy types in the 1991 edition of NFPA 101. In it, high-rise buildings are required to be protected throughout by an approved, supervised automatic sprinkler system.

But, this requirement is not just for new construction. There are also certain requirements for adding sprinkler systems to existing buildings, such as section 13.7.13.2, where it states that an approved, supervised automatic sprinkler system is required if there are assembly occupancies in the high-rise portion of the building.

So, let's say we have a ten story existing building with an auditorium on the top floor for presentations and events. In this example, a sprinkler system would have to be installed. In some occupancies, when sprinklers are installed, there might be considerations made and less fire-resistance rated openings required.

As mentioned earlier, the IBC also references high-rise buildings, and it is called out in Section 403. The first statement is section 403.1 makes an exception for four types of construction as follows:

(1) Airport traffic control towers;
(2) Open parking garages;
(3) Any portion of a building with a Group A-5 occupancy, which are assembly groups such as amusement park structures, bleachers, grandstands, and stadiums; and,
(4) Groups H-1, H-2, and H-3 occupancies, which are all hazardous occupancy types that can be hazardous. These occupancy types are not bound by the same requirements of the code and should be referred to in their respective sections.

Although total evacuation is the ideal plan for safety, sometimes that is not possible, especially in high-rise

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buildings where the means of egress might be damaged, engulfed by fire or impossible to get to for some other reason. NFPA 101 refers to the various Occupant Evacuation Strategies in Table A.4.8.2.1 (3) of Annex A, where in addition to Total evacuation and Shelter-in-place, one other strategy for Relocation or partial evacuation is also listed.

In this case, some of the occupants would leave the building, while others might be relocated to another part of the same or different floors in the building. When using the Shelter-in-Place or Relocation strategies, it is of utmost importance that the fire-rated doors operate properly - and **exactly** - as they are intended to in order to keep the fire on one side of the opening for the code required and tested period of time.

Although the fire might be kept on one side, there is still the issue of smoke safety. And, although smoke and fire perimeter door and frame seals exist to assist with controlling the smoke in a building, smoke is much more difficult to contain than fire.

As real estate becomes less and less available horizontally in major cities, we will continue to grow vertically, seeing cranes fill the skylines with their constructed buildings. As such, we will continue to look to develop optimal egress systems with fire resistance rated fire barriers, smoke barriers and other assemblies to ensure fire and life-safety for all occupants.

Scott J. Tobias, AHC/CDC, CDT, CFDI, CSI, LEED AP is the published author of Illustrated Guide to Door Hardware: Design, Specification, Selection. He currently serves on the Door & Hardware Institute's (DHI) Board of Governors and has been servicing the architectural, design, and construction communities for over 25 years. With multi-disciplinary door opening industry experience, Scott provides independent door and hardware consulting services including Division 08 specification writing, educational training, and public speaking. Scott can be reached at scott@scottjtobias.com or 845-742-4827.

Are Enclosed Elevator Lobbies Needed in High-Rise Buildings?

By Douglas H. Evans, PE, FSFPE, DHE FPE LLC

"Can construction requirements for enclosed elevator lobbies be written in understandable and enforceable performance criteria for integration into Building and Fire Codes?"

History & Purpose

Enclosed elevator lobbies in high-rise buildings have been required by building codes adopted throughout a large portion of the US since the 1970s. These protected spaces are primarily intended to provide an increased level of protection for occupants in multi-story buildings by limiting smoke migration from floor to floor. They also fulfill other functions, such as providing areas of refuge and locations for fire department staging operations.

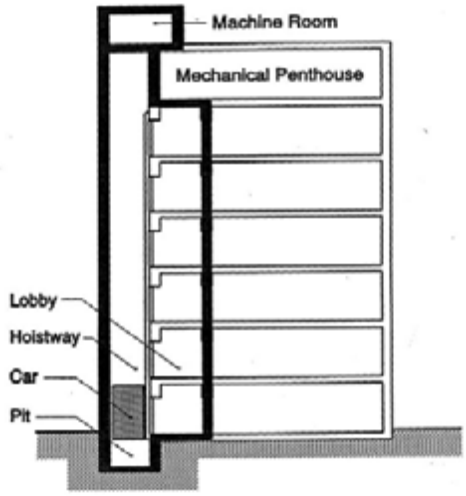

Figure 1: Elevator system including elevator equipment, machine room, hoistway and elevator lobby (Courtesy of Dr. John H. Klote, PE)

Substantial elimination of enclosed elevator lobbies has been proposed to the last several editions of the International Building Code. Although specific applications have been accepted by the voting members, substantial elimination of enclosed elevator lobbies has continued to be rejected.

The proponents of the deletion have cited technical analyses and the absence of losses to justify reduction of this additional level of protection. The technical analysis referenced in these arguments primarily focused on fuel limited and sprinkler controlled fires. In these cases, the smoke and heat generated were shown to be insufficient to cause untenable conditions on floors remote from the fire. This is as expected, but is it reasonable to base life safety protection in structures between 75 and 420 feet high on these assumptions?

After considering the arguments for eliminating enclosed elevator lobbies, I realized that the proponents of this deletion have some valid points. If fire/smoke growth/spread is limited by building components (compartmentation), automatic sprinklers, combustible loading (type and size of fuel packages) or other means, elevator lobbies may, in fact, provide little to no additional benefit.

Let's consider each of these aspects that reduce the need for enclosed lobbies:

Having specialized in coordinating fire protection aspects for the mega-resorts on the Las Vegas Strip for 22 years, my primary concern is a large open space with substantial fuel load located within the same environment as the elevator landing. This concern need not be limited to a casino; it could be an open office plan, retail sales floor(s), restaurant(s), convention spaces or any other reasonably large open space on any floor with sufficient combustible load to allow fire to propagate throughout the open space. With any of these scenarios, the only standard protection measure that can limit fire growth to the extent enclosed elevator lobbies may not be necessary is automatic sprinklers.

Figure 2: Ground floor access that is primarily used for elevator access (FCIA Photo.)

But, how dependent on automatic sprinklers is it reasonable to be? The failure rate of automatic sprinklers normally cited these days is around ten percent[1]. An additional concern is the fact that fires that may be sprinkler-controlled, yet shielded from direct sprinkler water spray, can still generate substantial quantities of smoke. Those of us that participate in code development are the voice of the public and must consider if it's reasonable to accept that 9 out of 10 fires in large open areas containing sufficient fuel don't need the additional protection provided by enclosed elevator lobbies.

Over the years, there have been a number of non-sprinkler limited fires that have contributed to horrendous fire losses all over the world. Disregarding these losses is in essence "rolling the dice". The question isn't **IF** a major life loss fire will occur in which enclosed elevator lobbies would have helped, **IT'S WHEN**.

Limiting Fuel Loads – Separation through Compartmentation

Limiting fuel loading is an ongoing maintenance issue. Combustible fuels may only be transient, but they still create a fire hazard, and therefore, must still be considered. In most instances it will be difficult, if not impossible, to limit combustible loading sufficiently to protect against the concern outlined herein.

How about separating the elevator landing with building components that are capable of limiting the spread of heat and smoke from floor to floor through the hoistway? Isn't that the protection elevator lobbies are intended to provide? There may be a number of design approaches that can meet the intent of enclosed elevator lobbies without incorporating additional compartmentation into the building. These can include a combination of: separating the elevator landing from contiguous fuels with rated construction; limiting the size of the space the elevator opens onto; and limiting the fuel load in that space.

These separations are provided by default in a number of ways.

Ground floor entrances to high-rise buildings frequently contain little more than access to various elevator banks. If other uses are included on these floors, they are typically separated for security purposes. The fuel loading in these ground floor elevator entrance areas is typically limited so as to not restrict occupant movement, and may include a security/information desk, a couple of benches, a few artificial plants and refuse receptacles.

Floors that house a single tenant frequently utilize **open office plans**. These single tenant floors are typically separated from the elevator landing for security purposes. In these cases, it creates little to no additional hardship on tenants to construct partitions or barriers that are capable of limiting the spread of fire, heat and smoke.

When floors contain multiple tenants and residential uses, **corridors** - whether rated or not - are constructed to provide controlled access between elevators and the specific use areas. These public circulation paths are typically separated from the use areas for security purposes to restrict unauthorized access. With corridors (but no lobbies) on each floor, it may be determined that occupants should utilize a "defend in place" approach, meaning occupants on floors remote from the fire do not evacuate during a fire emergency on other floors. There are ways to overcome this concern/limitation, such as smoke detection near elevator landings to provide early warning to occupants of non-tenable conditions. It may also be determined that a "defend in place" approach is not needed as described in the following paragraph.

Residential floor with corridors that provides access to use areas. (FCIA Photos.)

If lobbies or corridors are constructed on each floor and fuel loading in those spaces is minimal, the potential for a (non-sprinkler limited) fire to generate sufficient heat and smoke to create non-tenable conditions on floors remote from the fire is expected to only occur in the use areas. Since the heat and smoke generated would be separated from the hoistway by partitions that can be constructed to restrict air movement, the heat and smoke that reaches the hoistway would be limited, and migration to non-involved floors is not expected to exceed the concentrations intended by the present code requirements.

Based on the preceding, it seems apparent that the lack of losses described by opponents of elevator lobbies can be attributed to these inherent separations that exist in most high-rise buildings. Limited fuel loading is also inherent in the ground floor entrances and corridors as described above. As such, a form of enclosed elevator lobbies already exists in most high-rise structures, and taking advantage of these existing barriers may be all that is necessary to achieve the protection intended. Since this eliminates one level of redundancy (the lobby) to the passive protection presently mandated, I am not promoting this approach, but it may be determined by the voting members that this protection is sufficient to allow acceptance into Building Codes.

Other approaches to limit migration of heat and smoke via hoistways can be incorporated into the design as well. These approaches include what may be termed "zero square foot" lobbies. Various manufacturers offer products/assemblies to fulfill this niche (see following photos).

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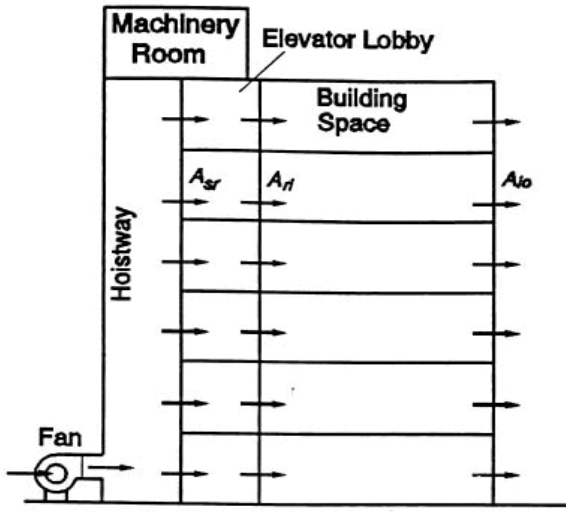
Zero sq. ft. lobby
(Photo courtesy of McKeon Door Company.)

Zero sq. ft. lobby (Photo courtesy of SMOKE GUARD, INC.)

Some of these products are compliant with applicable codes. Some have recognized Evaluation Services Reports, while still others have been accepted through the Alternate Methods/Materials option of the Codes. Despite their differences, most of these applications provide cost effective, non-intrusive options to limit migration of heat and smoke from floor to floor through hoistways.



Elevator smoke control by shaft pressurization
(Courtesy of Dr. John H. Klote, PE)

Another option to enclosed elevator lobbies already recognized by codes is achieved by pressure differences. One approach is to pressurize the hoistway relative to the remainder of the building, thus limiting smoke intrusion into the hoistway, as depicted by Figure6. An alternative approach is to draw the floor of origin negative and maintain non-involved floors at a higher pressure relative to the hoistway, which provides the protection intended by restricting air movement between floors via the hoistway.

As described above, there are a various approaches to limit heat and smoke from entering hoistways and migrating from floor to floor. It's apparent to me that limiting the potential for smoke and heat generated by a non-sprinkler limited fire by enclosed elevator lobbies or other equivalent approaches provides a prudent level of protection. So, instead of asking if enclosed elevator lobbies are needed, one should more appropriately ask: how can the performance criteria included herein be written in understandable and enforceable language that can be integrated into Building and Fire Codes?

After 22 years as a Fire Protection Engineer with Clark County (Nevada) Building Department, Mr. Evans founded **DHE FPE LLC** *to provide specialized consulting services to the construction industry. In his position with Clark County, his primary focus was coordinating fire protection aspects for the mega-resorts on the Las Vegas Strip. This specialization requires a working knowledge of most fire protection aspects including suppression systems, detection and alarm systems, elevators, fire-resistive construction, exiting, smoke management systems, hazardous materials, fire testing, fire modeling, secondary power supplies, and an understanding of the applicable codes and standards. Mr. Evans is a Fellow of the Society of Fire Protection Engineers, member of NFPA and a registered Fire Protection Engineer. He can be reached at dhefpe@gmail.com.*

References:

[1]U.S. EXPERIENCE WITH SPRINKLERS; JOHN R. HALL, JR. June 2013

National Fire Protection Association Fire Analysis and Research Division

US Experience with Sprinklers

Photoluminescent Egress Path Markings Guide You Out

By Marina Batzke

When the first terrorist bomb attack happened at the New York City World Trade Center (WTC) in 1993, the explosion in the parking garage disabled the WTC's main electrical power line and knocked out the emergency lighting. The smoke generated rose up to the 93rd floor of both WTC towers, even in the emergency staircases. It took building occupants hours to evacuate, many through smoke.

WTC NYC Photoluminescent Step, Landing and Handrail Markings 1994. (Photo: Copyright PERMALIGHT®.)

Following these events, the owners of the WTC twin towers, the Port Authority of New York and New Jersey, installed photoluminescent exit path markings inside the emergency staircases. In 1994, each step edge, each landing and the handrails on both sides were equipped with photoluminescent markings.

Seven years later when September 11, 2001 happened, these glow markings came to good use leading building occupants to safety.

NIST Studies Egress

NIST, the *National Institute for Standards and Technology* interviewed survivors of the 9/11 events, and 33% of people in Tower 1 and 17% of people in Tower 2 mentioned the yellowish markings that aided their escape [http://wtc.nist.gov/NCSTAR1/PDF/NCSTAR%201-7.pdf]. Based on the NIST recommendations, the City of New York soon implemented a range of new requirements after 9/11, including photoluminescent exit path markings in high-rise office building emergency staircases.

Since its 2009 edition, the *National Fire Protection Association (NFPA)* Life Safety Codes have non-electrical exit stair path marking requirements in Chapter 7: Means of Egress. Also in 2009, the *International Code Council* (ICC) added non-electrical, luminous egress path marking requirements for high-rise building staircases to its nationwide codes IBC – *International Building Code* and IFC – *International Fire Code*. The markings are required in buildings of groups A – Assembly, B – Business, E – Educational, I – Institutional, M – Mercantile and R-1 – Hotel/Motel.

The markings get applied to each leading edge of a landing and on each step inside a staircase. The top surface of all handrails gets marked. Perimeter demarcation lines mark the egress path along all horizontal areas, i.e. on landings along the wall base and in any vestibules/ corridors that are part of the egress path. Obstacles that project more than 4 inches into the egress path get highlighted with a black-photoluminescent contrasting warning

NYC high-rise office building exit path markings 2005. (Photo: Copyright PERMALIGHT®.)

UL1994-listed photoluminescent egress path markings since 2009.
(Photo: Copyright PERMALIGHT®.)

marking to avoid people bumping into a protrusion in the dark. Floor identification signs illuminate the stairway information. Doors from exit enclosures through which occupants must pass in order to complete their evacuation get marked all around on the door frame, the door hardware (push bar or door handle) gets highlighted and an emergency exit symbol sign (Man to the left or right) gets installed no higher than 18 inches above the floor.

During a building fire typically smoke forms, rises under the ceiling and obscures the electrical lighting. Occupants need to drop to the floor where breathable air remains the longest and evacuate under the smoke layer. Because of this, the photoluminescent egress path markings are installed in a low location to be visible underneath the smoke layer.

One important aspect is that these Photoluminescent egress path markings are NON-electrical, meaning they work during power outages. Photoluminescent markings are activated by ambient lighting. They are typically UL1994-listed by an *Nationally Recognized Testing Laboratory* (NRTL)- like Underwriters Laboratories or Intertek. The markings are able to be activated by only 1 foot-candle of ambient lighting and - just like electrical emergency lighting – are tested at 90 minutes in the dark. The markings then continue to emit their glow for hours to come until they are again re-charged by ambient lighting.

Markings to be installed on the floor, such as metal stair nosing and anti-slip tape, additionally have to get UL410-floor suitability tested.

In 2014, the new One World Trade Center in New York City was again getting equipped with photoluminescent exit path markings in the emergency staircases to make the high-rise building safer with lights on and off. The installation is already complete, protecting the building occupants.

Marina Batzke is General Manager of American PERMALIGHT, Inc., based in Torrance, California; incorporated since 1988; Manufacturers of Photoluminescent UL924-listed Signs and UL1994-listed Egress Path Markings. Marina Batzke is ASTM Committee E12.13 'Photoluminescent Safety Products' Chair, member of the UL Standard Technical Panels UL924 and UL1994, and NFPA member. Marina can be reached at info@americanpermalight.com.

Photoluminescent Stair ID Sign.
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Photoluminescent Obstacle Marking 2014.
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Industry News

FCIA Firestop Industry Conference & Trade Show – Don't miss FCIA's Firestop Industry Conference & Trade Show – FIC 2016 – this year. At The Talking Stick Resort and Casino, Scottsdale, AZ, FCIA sets the stage for a great program. Listen to what happened at the ICC's Public Comment Hearings as Bill Koffel updates and fills us in. The City of Phoenix' Joe McIlveney gives us Chapter 7 from his perspective. Plus, The Joint Commission's Anne Guglielmo, ASHE's Jonathan Flannery and so much more brings great education on key issues to FCIA Members. And, don't forget the Ray Usher Golf Outing! A spouse tour, Awards Luncheon, FCIA Elections, some great relationship building and networking all bring FCIA Members together for a great week in AZ. Don't miss it. Register today at www.FCIA.org

ICC's Annual Business Meeting and Group A Public Comment Hearings – FCIA participates in the ICC Code Development Process.

Every three years, the codes are reviewed through public proposals submitted by interested parties and the public alike. ICC's Staff does not submit proposals, only those interested in the codes. The proposals are subject to organized debate at two hearings.

This April, the ICC Committee Action Hearings took place in Memphis, TN. At this hearing, a balanced committee of Building Code Officials, Fire Marshals and industry professional heard debates in one- and two-minute statements from supporters and opponents before debating amongst the committee, followed by a vote action.

The public then had the opportunity to comment and oppose or modify any action made by the committee. Those actions that are not "publicly commented", are then part of the consent agenda and pass upon approval of the agenda by the assembly. Those actions that are "publicly commented", become part of the Public Comment Agenda.

The Public Comment Hearings, formerly known as the Final Action Hearings, provide debate on those public comments. At this hearing, only 'governmental and honorary members' at ICC are able to vote. Industry may participate through the debates. The hearings are webcast on www.ICCSAFE.org.

Sign-in on Oct. 2 to see the schedule. Download the Public Comment Hearing (PCH) Monograph that has all the public comments to be heard. Visit www.ICCSAFE.org, Code Development Tab.

Check out the Code Corner in this issue of Life Safety Digest for key firestop industry proposals.

ICC and Hanley Wood Form Communications Partnership – ICC and Hanley Wood announced a joint communications initiative to connect building product manufacturers and trade associations to the code community and to support skilled trade education. The initiative will begin with a pilot newsletter program called Code Counts — designed to inform and educate the code community about product and practice innovations — with a portion of the revenue collected from newsletter sponsors going to the ICC's High School Technical Training Program.

ICC Crowd Manager training program updated – Crowd manager training, first offered by the ICC three years ago, makes public gatherings safer by teaching event staff how to respond and act when a disaster occurs. Crowd management safety can come into play at sporting events, concerts, state fairs, nightclubs and similar events. Crowd manager training is required by all national fire codes, including the International Fire Code, at public assemblies.

US Resiliency Council To Play a Key Role in Los Angeles' Resilient By Design Initiative – In December, Mayor Eric Garcetti released a bold initiative for the city of Los Angeles - *Resilient By Design*. His plan will focus on improving the earthquake resilience of buildings, water distribution and telecommunications. The US Resiliency Council's Building Rating System will play an important role as a tool for evaluating the performance of the city's building infrastructure.

What does resiliency have to do with firestopping, fire-and smoke-resistance? Extreme fire spread means more time to return the building to a useful state. By providing compartmentation and structural fire-resistance, buildings are less likely to be out of service for long; or, the damage from fire events can be minimized.

Of course, FCIA supports alarms and detection, sprinklers and education of building occupants. With fire-resistance-rated construction and effective compartmentation in place, safer and more resilient buildings are the result. Check out www.USRC.org for more info.

FCIA and IFC Leadership Meet – The Firestop Contractors International Association (FCIA) is an organization of Contractors, Special Inspection Agencies, Manufacturers, Manufacturers' Reps, Distributors, Building Code Officials and more. The International Firestop Council (IFC) is mostly made up of the leading Firestop and allied product Manufacturers.

FCIA's Board of Directors and IFC's Leadership met in Long Island, NY in August to build relationships and also to form task groups for industry issues important to Contractors, Inspectors, Manufacturers and others.

Outcomes from the meetings included forming task groups, with Engineering Judgments and Inspection Issues two of the key topics discussed. Watch *Life Safety Digest* for progress reports and articles about each topic.

Building Innovation 2016: The National Institute of Building Sciences Fourth Annual Conference & Expo – The US Government formed NIBS in the 1970's to serve as an interface between government and the private sector. NIBS has many committees and organizes task groups to study important new developments in the industry, including Building Information Modeling (BIM), Resilience in Building Construction, as well as a host of other issues.

The National Institute of Building Sciences

Fourth Annual Conference & Expo is **scheduled for Monday-Friday, January 11-15, 2016, at the Washington Marriott Wardman Park in Washington, D.C.** The program will explore solutions for *Achieving a Resilient Future.*Check out www.NIBS.org for more info.

AIA & ICC Collaborate – The American Institute of Architects (AIA) and the International Code Council (ICC) announced an agreement to collaborate across a wide range of initiatives, ranging from code development and compliance, to sustainability and energy conservation, to increasing building code knowledge among architects.

Among the common objectives under the five-year AIA-ICC Memorandum of Understanding include Model Code Development, Education and Training, Advocacy, Engaging member groups, Communications and Digital Transformation.

2015 Fire Prevention Week to focus on smoke alarms where you sleep – Fire Prevention Week was established to commemorate the Great Chicago Fire, the tragic 1871 conflagration that killed more than 250 people, left 100,000 homeless, destroyed more than 17,400 structures and burned more than 2,000 acres. The fire began on October 8, but continued through the night and did most of its damage on October 9, 1871.

NFPA is focusing on residential smoke alarms this year for Fire Prevention Week. The key message of this year's **Fire Prevention Week campaign, October 4-10**, is to install smoke alarms in every bedroom, outside each separate sleeping area, and on every level of your home, including the basement. Larger homes may need more alarms.

FCIA believes that life-saving home smoke alarms are part of an important combination of Fire-and Smoke-Protection Features that are used in buildings, residential or otherwise. It's all part of a package that keeps occupants safe in buildings. Effective compartmentation, fire and smoke detection and alarms, sprinklers and education of occupants on egress and fire safety are all critical pieces of the fire-and life-safety puzzle for high-occupancy buildings worldwide.

FCIA thanks NFPA for promoting this important initiative. For info on NFPA's Fire Prevention Week, visit http://www.firepreventionweek.org.

Barrier Management Symposiums Praised – During the 'Plenary' Session at the American Society for Healthcare Engineering (ASHE) Annual Convention in Boston this year, George Mills, Director, Engineering at The Joint Commission (TJC), and Dale Woodin, ASHE Sr. Executive Director, announced a new partnership to educate ASHE Member and Non-Member Healthcare Engineers about critical healthcare building safety topics.

According to George Mills, "Education works, and the Barrier Management Symposiums have proven this through reductions in barrier violations." Dale Woodin echoed the sentiment, stating that "usually the regulator and the regulated entity are not on the same page. For this initiative, we are together.

As a result of the successes we've had with Barrier Management Symposiums, ASHE and TJC are both now collaborating to build a compendium of knowledge to improve other important areas of healthcare facilities.

Don't miss the next **Barrier Management Symposium** in **Bristol, TN**, **November 16 and 17**. Check out www.FCIA.org for info.

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informa
exhibitions

New Gypsum Association Fire Resistance Manual – The Gypsum Association (GA) is pleased to announce the release of the twenty-first edition of the Fire Resistance Design Manual (GA-600-2015). Revised on a three year basis, GA-600 has been referenced by the model building codes as a source of fire-resistive designs for more than 40 years. Newly revised at 306 pages, the 2015 edition contains nearly 100 new systems that supplement existing assemblies for walls and partitions, floor-ceiling systems, area separation walls and many others. Among these are 20 new head-of-wall and base-of-wall systems that significantly expand the options for perimeter relief. Visit www.GYPSUM.org for info.

ASHE & The Joint Commission Collaboration – The American Society for Healthcare Engineering (ASHE) is collaborating with the Joint Commission to provide resources and tools to help hospitals comply with life-safety and environment of care requirements. The collaboration was announced at ASHE's 52nd Annual Conference and Technical Exhibition in Boston.

ASHE
American Society for Healthcare Engineering
of the American Hospital Association

The Joint Commission.

The Joint Commission has identified its top eight physical environment standards that are frequently cited during surveys of hospitals and other health care facilities. Through their collaboration, ASHE and the Joint Commission will be providing resources that help facility professionals keep their organizations in compliance with these challenging standards.

The Joint Commission has created an online physical environment portal to house its resources related to these top issues. ASHE will be providing resources—including tools, best practices, and technical documents—on its new Focus on Compliance webpage.

Every two months, ASHE and the Joint Commission will focus on a new standard, with the previous information archived on this page to create a library of compliance resources. The following schedule outlines when resources will be available for each of the eight standards:

- August/September 2015: Utility systems (EC.02.05.01)
- October/November 2015: Means of egress (LS.02.01.20)
- December/January 2016: Built environment (EC.02.06.01)
- February/March 2016: Fire protection (EC.02.03.05)
- April/May 2016: General requirements (LS.02.01.10)
- June/July 2016: Life safety protection (LS.02.01.30)
- August/September 2016: Automated suppression systems (LS.02.01.35)
- October/November 2016: Hazardous materials and waste management (EC.02.02.01)

Building Safety & Design Expo Ready to Open in Long Beach, CA – The Building Safety & Design Expo provides a platform for exhibitors to demonstrate and educate building safety and design professions about the latest products and services needed to keep buildings safe, as well as how to meet and maintain compliance with accepted codes and standards. Held in conjunction with the ICC Public Comment Hearings, the Building Safety & Design Expo brings exhibitors face-to-face with professionals from the built environment. The Expo kicks off at the Long Beach Convention Center in Long Beach, CA this September 27-28, 2015. For more information, visit www.BSDExpo.org.

BUILDING SAFETY&DESIGN EXPO
September 27th - September 28, 2015
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www.BSDExpo.org

CONSTRUCT 2015, Building A Better World – This year's CSI Expo, CONSTRUCT 2015, heads to St. Louis, MO, September 30-October 3 for their annual event dedicated to the institutional, industrial and commercial building industry. With a wide and varied offering of accredited education programs, an expansive hall floor filled with hundreds of exhibitors and myriad networking events, technical tours and special events, CONSTRUCT is the only dedicated national event specifically designed to provide the commercial building team real-world, practical products and education solutions.

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BUILDING A BETTER WORLD
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IFMA Heads to Denver for Annual World Workplace Conference – The International Facility Management Association (IFMA), founded in 1980, is the world's largest and most widely recognized international association for Facility Management professionals, supporting 24,000 members in 105 countries. The IFMA World Workplace Annual Conference is the group's Annual Fall Conference and Expo, and provides an opportune arena for professionals to facilitate idea-sharing and knowledge-exchange between professionals who support the work environment. This year's event will be held October 7-9, 2015 at the Colorado Convention Center in Denver, CO. To learn more, visit http://worldworkplace.ifma.org/home.

Employee or Independent Contractor? - From www.IRS.gov, there is ton of info that helps employers determine status of contractors or employees. At the US Department of Labor website, again, there is much info about how to classify the individual. In Canada, there are also several resources to visit to determine which entity the person is, employee or independent contractor. But, what's the big deal? It seems that some Independent Contractors may **not** be covered by Workers Compensation Insurance (owner is exempt) or from paying taxes, as it is easier to find an employer than an individual.

To learn more, visit: **US Department of Labor, Internal Revenue Service**

- http://www.dol.gov/whd/workers/misclassification/
- http://www.irs.gov/Businesses/Small-Businesses-&-Self-Employed/Independent-Contractor-Self-Employed-or-Employee

Canada Revenue Agency, Blog from Wagepoint

- http://www.cra-arc.gc.ca/E/pub/tg/rc4110/README.html
- http://blog.wagepoint.com/h/i/70994556-employees-vs-contractors-which-one-is-it

Unmanned Aircraft Systems - Drones - There has been a lot of attention paid to flying drones in various places. Before you start thinking it's time to have a drone do that inspection above a ceiling or on a roof, do your due diligence. The rules for operation are varied and there is little guidance on exactly how to comply with local regulations.

What is an unmanned aircraft system (UAS)? An UAS is the unmanned aircraft (UA) and all of the associated support equipment, control station, data links, telemetry, communications and navigation equipment, etc., necessary to operate the unmanned aircraft.

The UA is the flying portion of the system, flown by a pilot via a ground control system, or autonomously through use of an on-board computer, communication links and any additional equipment that is necessary for the UA to operate safely. The FAA issues an experimental airworthiness certificate for the entire system, not just the flying portion of the system.

Key points to remember are to operate within line of sight, less than 500' and away from public spaces and airports. Want to fly a drone? Check out https://www.faa.gov/uas/ before you fly.

Bilco Moves - The Bilco Company held a ribbon-cutting ceremony to officially mark the company's move back to New Haven, CT where it was founded in 1926. Congrats to Bilco and best wishes and continued success.

MEMBERSHIP HAS ITS PERKS...

Firestop Contractors FCIA® International Association

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 "DIM" 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.

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Code Corner

ICC Code Development Process & Public Comment Hearings – ICC's Public Comment Hearings, formerly known as the "Final Action Hearings", will bring a close to the 2018 International Building Code.

In FS 20-15, the International Firestop Council (IFC) put in a proposal to incorporate "leapfrog" protection for perimeter fire containment systems. There has been a standard under development at ASTM for at least 10 years, and it is still not complete. This is a situation where the code can speak to the standards development process through a requirement.

At FS 34-15, IFC tried to add the new ASTM E 2837 Standard Test Method for Determining the Fire Resistance of Continuity Head of Wall Joint Systems Installed between Rated Wall Assemblies and Nonrated Horizontal Assemblies to the IBC. This was disapproved, but is a very important standard that does belong in the code.

At ICC's Hearings, in FS 54-15, FCIA proposed to add the FM 4991 and UL Qualified Firestop Contractor Programs to the Building Code. We had support from a large University who mentioned, "We use these contractors now, and they are good". Opponents suggested that the programs, while excellent, do not belong in the code. They belong in project specifications.

It's a good thing that FCIA also saw that specifications were important. The major specification systems, AIA's MasterSpec and CSI's SpecLink, both have the contractor programs specified within their master specifications.

For FS 55-15, FCIA's proposal to tie the manufacturers' installation instructions to the tested and listed system passed unanimously. A public comment was submitted, that does not seem objectionable, which will be heard at the end of September at the Public Comment Hearings.

In FS 56-15, the Fire Safety Committee was able to have a proposal from UL modified from using the word materials to systems, which was really UL's intent all along. It's great to be able to work with people to build a better code.

Several proposals dealing with 'T-Ratings' in horizontal Assemblies were disapproved including FS 60, FS 64 and FS 65.

Interestingly, FS 6-15 dealt with ceiling membrane penetrations, protecting them with listed light fixtures. This is a big improvement to the code, as it completes the continuity of the ceiling membrane when penetrated by light fixtures.

In FS 69-15, the perimeter fire containment requirement was removed from the rooftop and curtain wall area as requested by the International Firestop Council.

FS 70-15 was FCIA's proposal to add that firestops be installed to the manufacturers' installation instructions and the listing criteria. This ties these two important documents together to bring better fire and life safety to projects.

In FS 73-15, The International Firestop Council attempted to rewrite the section on Joints. While a great effort, it is a tough topic to tackle. FCIA and IFC have pledged to work together on a new revision to submit at a later date, in addition to IFC's likely public comment.

In FS 105-15 and other proposals heard after it, the International Firestop Council tried to add the ASTM E 2816 Standards Test Method for Fire-Resistive Metallic HVAC Duct Systems to the code for a shaft enclosure. This was disapproved.

In the healthcare arena, G 110-15 brings a debate about the size of a smoke compartment using smoke barriers to divide spaces. The proponents wish to have the size reduced from 40,000 SF (3716 m2) to what it was prior, 22,500 SF (2092 m2), in I-2, Condition 2 occupancies. The healthcare industry states that the 200' Travel Distance (60,900mm) limits compartment sizes. Opponents to the change state that there will be more equipment added to the bigger spaces, raising concerns about egress times and clutter in hallways obstructing egress.

We write forever on code development proposals; hHowever, this is a summary of the Committee Action Hearing and a look ahead to the results of the Public Comment Hearing. Watch the Winter Issue of Life Safety Digest for more about what happened during the International Code Council's Code Development Hearings in September.

Building Codes and Standards are a long-term project. It can take several code development cycles to make adjustments to the code, and with each cycle lasting three (3) years, it doesn't take much to have a code change take nine (9) years to be fully integrated into the IBC. The next opportunity for proposals to the International Building Code is in preparation for the 2021 Code Development Cycle. Best wishes to all participating in this activity.

NFPA's Fire Protection Features Committee – NFPA's Fire Protection Features Committee met in Milwaukee in late July. FCIA participated as a part of the committee and was able to be part of the consensus in this round of discussion.

FCIA worked with a small committee to review NFPA 101 and NFPA 5000 Chapter 8 and propose modifications to make the two documents consistent. This passed the initial round of face to face discussion. The Committee proposed to add language to NFPA 101 and NFPA 5000 to tie the tested and listed system design to the manufacturers' installation instructions.

We worked with a small group at the meetings to add markings to fire or smoke barriers. The proposal called for stroke and width requirements for the print, as well as identification of the barrier to the code defined terms, such as "smoke barrier, do not penetrate". This is important as the terminology sets the tone for treatment of the barrier and its openings, joints and penetrations.

Another proposal dealt with adding language to tie the tested and listed systems for firestopping to the manufacturers' installation instructions. This was also successful at the committee level.

FCIA supported UL's move to alter the name of the NFPA 101 and NFPA 5000 Chapter 8 from Fire-Resistance to Fire Protection Features. This is very similar to what FCIA succeeded in changing at the International Code Council's International Building, Existing Building and Fire Code, changing the language from "Fire-Resistance" to "Fire and Smoke Protection Features". This description covers what these barriers do when called upon by fire: they protect against spread of fire and restrict or retard the passage of smoke.

Additionally, we worked together with the International Firestop Council on several other proposals to help bring better fire and life safety to buildings. A big thanks to NFPA's Kristin Bigda, Staff Liaison to the NFPA Fire Protection Features Committee. She always does a great job of making sure the details all come together as we work to build a great NFPA 101 and NFPA 5000 document.

Life Safety Digest

2015 Industry Calendar

Sept. 14-16
Middle East FireSafe
Dubai, UAE
www.hse.flemingulf.com/middle-east-firesafe-conference

Sept. 14-16
Oman Fire Safety & Security Exhibition (OFSEC)
Muscat, Oman
www.muscat-expo.com/ofsec/

Sept. 20-22
CHESS SCISS National Conference
Edmonton, AB
www.ches.org

Sept. 27-29
ICC Building Safety & Design Expo
Long Beach, CA
www.BSDexpo.org

Sept. 30-Oct. 3
CONSTRUCT/CSI Show
St. Louis
www.CONSTRUCTSHOW.com

Oct. 7-9
IFMA World Workplace
Denver, CO
www.worldworkplace.ifma.org/

Oct. 13-15
FCIA Fire & Smoke Barrier 'DIIM' Educational Symposium
Doha, Qatar
www.fcia.org

Oct. 18-20
FCIA Fire & Smoke Barrier 'DIIM' Educational Symposium
Abu Dhabi, UAE
www.fcia.org

Nov. 3-6
FCIA Firestop Industry Conference & Trade Show
Talking Stick Resort, Scottsdale, AZ
www.fcia.org

Nov. 16-17
FCIA, UL, TJC, ASHE Barrier Management Symposium
Bristol, TN
www.fcia.org

Dec. 2-4
CONSTRUCT Canada
Metro Toronto Convention Center
Toronto, Canada

THE ADVENTURES OF APEX™ THE FIRESTOPPER

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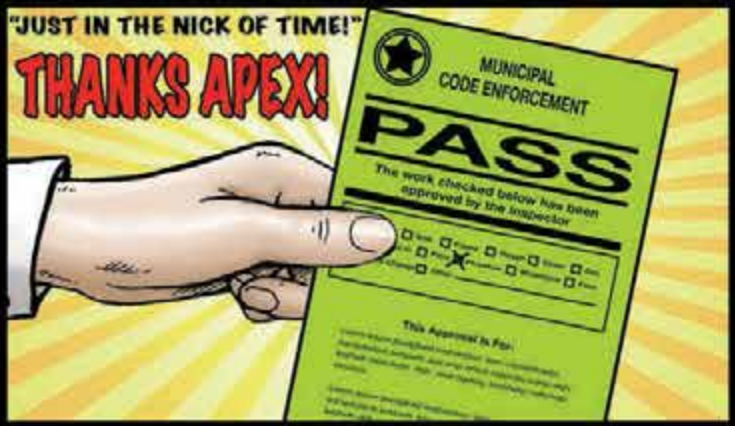

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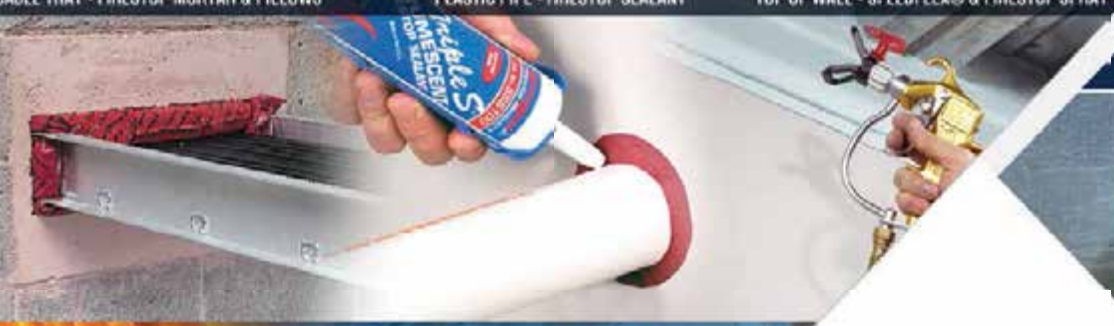

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