

Volume 5, No. 1

Winter 2008/2009

The Magazine of Effective Compartmentation

Life Safety DIGEST

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Five Critical Door Closer Solutions

Maintaining Life Safety Effectiveness

**Selecting Qualified Fire Door
Assembly Inspectors**

**The High Price of Neglecting Rolling
Fire Door Testing and Maintenance**

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On the Cover:

All Compartmentation Features Components require maintenance during the building life cycle. Read Life Safety Digest, and find out how and why.

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Reprints: Life Safety Digest Magazine Reprints are available from FCIA headquarters; 1-100 - \$.95/issue; 101-500 - \$.90/issue; 501-1000 - \$.80/issue; 1000+ - \$.70/issue. All shipments FOB Hillside, IL, 60162. Advertisers receive a reprint discount.

On the Web: You can find Life Safety Digest Magazine, including ads, text of articles and selected tables in this publication at <http://www.fcia.org>.

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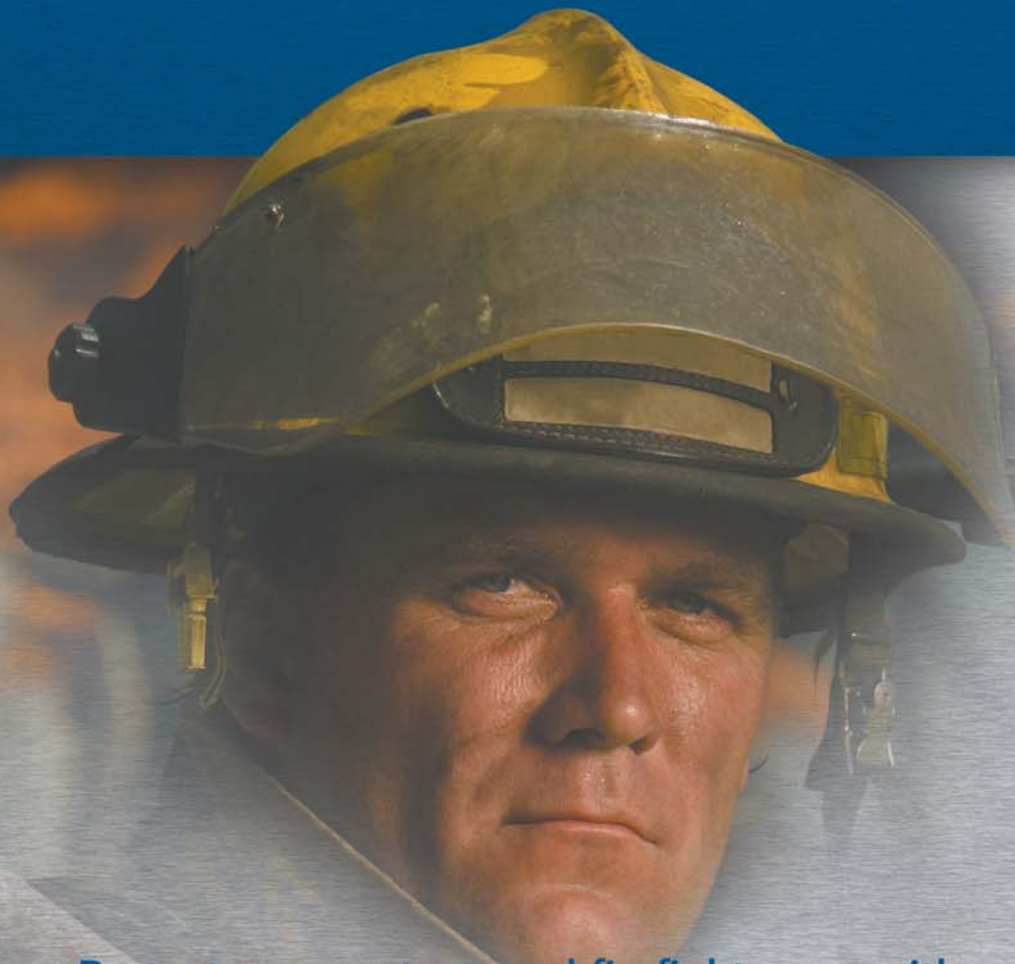
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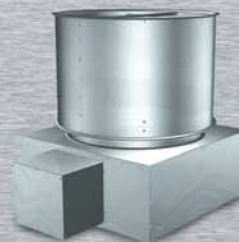
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Editors' Message

FCIA believes strongly in the proper design, installation, inspection and maintenance of fire-resistance-rated, smoke- and other resistant walls and floors. To keep the structure as effective as it was when completed during the construction process, periodic inspection and maintenance by qualified people brings continued reliability of fire-resistance and smoke-resistant systems when called upon to protect occupants and property.

Buildings have a life cycle, just like any other item we use daily. Its life-cycle though, can be very long, with lots of changes to building services that can affect the fire-resistance-rated elements; walls, floors, structural steel or concrete, doors, firestop-

ping, dampers, glazing long-term performance. Both the International Fire Code, 2009 version, and NFPA 101 require performance of these important fire and life safety items.

An annual inspection means someone has looked at fire barriers to maintain fire resistance continuity throughout the building's life cycle. This inspection sets up resource management of maintenance staff or outsourced contractors for fire and life safety services reliability, long term.

FCIA believes that all types of fire protection - alarms and detection, fire- and smoke-resistance-rated horizontal and wall assemblies and suppression systems, plus occupant education - need maintenance to

keep us safe, wherever we are, when an emergency event strikes.

Read and enjoy articles about inspection and maintenance of all fire-resistance-rated and smoke-resistant compartmentation features. Join FCIA and other associations that support the "design, install, inspect and maintain" attitude that brings safer buildings for you and me.

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Five Critical Door Closer Solutions



Automatic door operators are available in a wide variety of designs and functions to provide the accessibility required by ADA guidelines and the convenience appreciated by many other users as well.

Door closers are the heart of the openings in walls and are a dynamic link between the various dimensions of safety and security in a well-controlled building. They are expected to deliver precise performance over a long service life, and to look good while doing it. Here are some of the conflicting requirements that can arise between the above areas, as well as some thoughts on how to resolve them with the least difficulty.

By Bruce Reynolds

Five critical factors can affect the choice of a door closer, and they may assert themselves in varying degrees from one opening to another. When selecting a door closer, the complexity and interaction of all these factors makes it likely that one or more problem areas may be overlooked, only to cause trouble later. Factors to consider include:

- **Durability**-Providing durable, reliable, cost-effective control for high-traffic environments.
- **ADA Accessibility**-Providing a positive facility experience for all users.
- **Safety**-Providing reliable closing for non-hold open and hold open fire resistance rated doors.
- **Security**-Providing reliable closing to protect valuable assets.
- **Design**-Enhancing the integrity of a building's interior design.

When selecting a door closer, the challenge is to support each of these factors without compromising the others.

Finding the Right Balance

Building owners and facility managers strive to provide controllable environments that anticipate a full range of conditions and circumstances. They need to know a door is closing with enough force to fully close and latch, while making sure the door is easy to open by meeting ADA opening force requirements. They want door closers that are strong and reliable under heavy abuse, but don't disrupt the building's architectural lines. They need open corridor doors that will close if a fire occurs without being forced to stare at clunky, obtrusive hardware. On multiple doors throughout their buildings, they need to bridge the gap between ADA compliance, their budgets and their business objectives.

Durability

Durability includes the obvious need for strength in materials and construction, especially for high use or high abuse applications. Features such as forged steel arms, cast-iron cylinders, hardened, double heat-treated steel pinions and full-complement bearings are typical components of a heavy-duty door closer. Arms are the most vulnerable part of a door closer, and their performance significantly affects its stability and control. The forging process optimizes material strength and allows the arms to resist bending and breaking from abusive use and side loading. Hardened double heat-treated steel pinions reduce wear, while full-complement bearings provide more surface area to handle greater loads. Heavy-duty cast iron construction is available from some manufacturers in a broad range of products that includes surface-mounted door closers, concealed closers, high-security closers and ADA power operators. All are designed and constructed for high-traffic applications,

so the need for a heavy-duty door closer does not restrict the type of product available.

Many other factors also play a role in extending service life and reducing maintenance. Hydraulic fluid is the lifeblood of any hydraulic closer, but the viscosity of most hydraulic fluids requires constant adjustment as the temperature changes with the seasons. All-weather fluid maintains constant viscosity throughout normal temperature ranges and beyond while keeping door closer components working smoothly with little need for seasonal adjustments.

The results of a manufacturer's product testing also should be considered when evaluating durability. While the ANSI/BHMA (A156.4) minimum industry standard requires a door closer to operate for 1.5 million cycles, many high-use door openings may reach up to 1.8 million cycles in a single year. To meet these conditions, some door closers are certified by their manufacturer to pass tests beyond 10 million cycles.

Accessibility

ADA Accessibility has made buildings more accessible for everyone, and taking a proactive approach to providing accessibility is sound business strategy. It makes buildings easier to use for the elderly or frail, for people with packages or small children, and others who just need a little help, in addition to those with disabilities. It provides a positive, convenient customer experience, as well as a safe, secure and productive environment. It also can increase traffic and revenue, reduce the risk of negative publicity and help avoid litigation. Although the Americans with Disabilities Act is a civil rights law and not a building code, its guidelines have become deeply ingrained into the practice of building management.

Central to the need for accessibility are the many types of automatic door operators available today. They include automatic operators for applications such as:

- High traffic entrances where operation is primarily manual, in low-energy electro-hydraulic or pneumatic hydraulic designs.
- High-traffic entrances where operation is primarily automatic, including entrances and cross-corridor doors, primarily in low-energy electro-mechanical products. A push-n-go feature initiates automatic opening when the door is put in motion manually.
- Concealed applications, where aesthetics are important. These low-energy electro-mechanical or pneumatic-hydraulic units are concealed in the header to preserve aesthetic appeal.
- Extremely quiet applications, such as libraries or churches. These are typically low-energy pneumatic-hydraulic units, and they can be concealed in the header for aesthetic appeal.
- Applications for exterior doors that require 8-1/2 lbs. of maximum manual opening force, provided by a low-energy electro-mechanical operator.
- Light to medium traffic applications, on interior doors such as restrooms, offices and corridors, with features such as push-n-go that initiates automatic opening when the door is put in motion manually and auto-reverse for added safety during opening.
- High-traffic applications where unimpeded flow is needed, such as grocery, retail and supermarket entrances, as well as airports. Adjustable closing, opening and back check speeds make it easy to tailor door operation to the application, for single, simultaneous pair or double egress configurations.
- Fire door applications, where the automatic power operator can be tied into a building's fire alarm system.

For those applications that



In high traffic and heavy use or abuse applications, the durability of the door closer is more important than ever to protect the integrity of the opening and the safety and security of building occupants.



Heavy-duty door closers provide control and durability in high use and high abuse conditions.

demand it, automatic operators are available that have passed 10-million cycle tests and are UL-listed.

Safety

Safety for a building's occupants includes self-closing doors as a vital part of the building's overall fire safety strategy. They are barriers to smoke as well as flames, and they work together with the building's fire walls and compartmentation. If a fire occurs, self-closing doors are effective only to the degree that their door closers reliably close and latch. Many



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fire-rated openings also are subjected to extensive traffic flow and abusive conditions, yet they must be automatically released and closed in the event of a fire alarm. Moreover, a set of complex fire and life safety codes intersect at each opening.

Heavy-duty surface-mounted door closers provide the safety of a closed door in the majority of applications. Often they are teamed with electronically controlled door holding magnets that hold the doors open until the current is interrupted, at which time the doors are released to close and latch shut. Typically seen in surface wall-mounted configuration, they are also available in standard and low-profile recessed wall mount or floor mount designs.

Other concealed and surface-mounted closer/holders are available for fire-rated doors up to 180 degrees that require hold-open. For high-traffic applications, a timed release closer/holder offers added safety with a built-in scanner that provides a hold-open function until traffic clears.

Security

Security tests a building most acutely at its moving parts, including the doors, locks and door closers. In fact, a building's security system is only effective if the door is closed. Every door included in the security perimeter needs to close properly if the full advantages of locking and access control systems are to be realized. A door that doesn't close consistently is vulnerable. The challenge to preserve security is complicated by the need to facilitate access and egress. Many security-critical openings also are subjected to high traffic flow and abusive conditions. In addition, building air pressure stack-ups are common, and hinges or locks that are inadequate or past their service life place added pressure on door closers.

Some solutions include heavy-duty surface closers and high security features such as extra-duty forged arms, heavy gauge metal security covers and tamper-resistant screws. Heavy-duty high security concealed closers are concealed in the door frame with a heavy-duty steel mounting plate to further resist tampering and vandalism.

Aesthetics

Design and aesthetics are an important part of a building's opening. They are a part of the building's visual appeal and help create a positive first impression. The aesthetics of an opening do not need to be neglected in the effort to satisfy the demands of door operation. Throughout the design of structure, there is a tension between the aesthetic aspirations of an architect and the real-world constraints of a project budget and building codes. Architects and designers have long understood that the utility of an entrance is also an opportunity to make a positive first impression with a visually pleasing door. Building owners have seen the results, and their expectations have been raised.

A door closer is the heart of the opening...in a fire resistance rated wall, wherever it occurs in the building. While its primary role is to maintain a safe and secure entrance, often subjected to high traffic and potential abuse, it can be integrated into the building's design without compromising its aesthetics. A variety of concealed closer designs can be applied to interior or exterior doors, aluminum transoms, fire-rated doors and doors in low-energy or high-abuse applications. For surface-mounted door closers, choices of plated finishes and standard or custom powder coat colors combine beauty with durability. Slim-line



In addition to a variety of concealed door closers, attractive slim line covers and options such as plating and durable, stunning powder coating are available to enhance appearance.

covers are available to provide a narrow design that improves the look of the closer and the doorway.

While it may never be possible to reach the perfect solution that meets all of the conflicting needs perfectly, more door control choices are available than ever before that go a long way toward bridging the gaps that have occurred in the past. Manufacturers are developing new products that will blend the best features of door closers and power operators to provide cost-effective solutions to multiple needs that also will be simpler to install and require less maintenance. Building owners and facility managers will soon reap the rewards of these efforts. 🔥

Bruce Reynolds is Marketing Manager-Door Controls for Ingersoll Rand Security Technologies in Carmel, Ind.

Selecting Qualified Fire Door Assembly Inspectors



By Keith Pardoe

Fire door assemblies are an essential element of the passive fire protection features used to divide a building into compartments. These compartments contain flames, heat, and smoke and, therefore, provide protection to occupants by allowing time to safely evacuate a building or reach an area of refuge within the building where they can wait for rescue. They need maintenance, just like other items in buildings. And, maintenance starts with proper Inspection.

As you might expect, fire door assemblies require special attention to detail starting with the specification stage of a new project to the final installation of the assemblies at the job site. Some types of fire door assemblies (e.g., access doors, horizontal sliding doors, swinging doors with fire door hardware) are manufactured as complete units that include doors, frames (when applicable), and operable hardware; all of which have been successfully tested and labeled.

In most cases, fire door labels are attached to the doors at the factory and are intended to cover all of the components used to form the assemblies. A notable exception to this practice is fire door assemblies that are comprised of swinging doors with builders' hardware, which are typically constructed in the field from components manufactured by several companies. In this case, each component is required to have its own label, and/or to be listed for the type of application for which it is being used. For example, swinging

fire doors that bear a label stating, "Fire Door to be Equipped with Fire Exit Hardware", are required to have a fire exit hardware device installed on them as the latching hardware. Installing any other type of latching hardware on the door voids the fire-rating of the entire assembly. Conversely, fire exit hardware devices (not to be confused with panic hardware devices) are only permitted to be installed on fire doors that bear the above mentioned label. (Other items of hardware have more subtle requirements and sometimes require research to verify their appropriateness for a specific application of a fire door assembly.)

A common assumption regarding swinging doors with builders' hardware is that the entire assembly is "labeled" if the door leaf has a label attached to it. While this is true of other types of fire door assemblies, the label attached to a swinging fire door with builders' hardware applies only to the construction and capabilities of the door leaf itself. Inspectors of these types of fire door assemblies need to look very closely at all hardware items attached to the doors and frames to be certain that all components meet the requirements of the installed fire door assembly.

NFPA 80, Standard for Fire Doors and Other Opening Protectives (2007 edition) requires fire door assemblies to be "operable at all times..." (NFPA 80, paragraph 5.1.3.1) and that deficiencies preventing the assemblies from operating properly be "corrected without delay" (NFPA 80, 5.1.5.1). NFPA 80's maintenance requirements in Chapter 5, "Care and Maintenance,"



Labeling systems designating fire resistance for swinging doors include the label on the frame, door and closer.

are applicable to newly installed fire door assemblies as well as fire door assemblies that were installed in compliance with previous editions of NFPA 80. Most building owners and property managers are unaware of their obligations regarding the ongoing maintenance of fire door assemblies.

NFPA 80 requires the annual inspection and functional testing of fire door assemblies to "be performed by individuals with knowledge and understanding of the operating components of the type of door being subject to testing" (NFPA 80, 5.2.3.1). It is important to understand that NFPA 80 does not quantify what constitutes an acceptable level of knowledge, nor does it require the inspectors to be professionally certified. However, in order for the Authority Having Jurisdiction (AHJ) to have confidence in the inspection reports, they need to be assured the persons performing these inspections have an acceptable level of training and expertise.

Third-party certification programs for inspectors, created by recognized authorities such as Intertek (through its Warnock Hersey Mark), increase the creditability of the inspectors by assuring the AHJ's and building owners that these inspectors have completed a certain level of training and have demonstrated an acceptable level of knowledge and expertise by passing a rigorous examination. Additionally, certified inspectors subscribe to periodic auditing of their inspection records and practices, as well as having to meet ongoing continuing education requirements to maintain their certification, which ensures these individuals are keeping up with current code changes and requirements.

In some cases, large facilities and institutions have established door maintenance programs with person-

nel trained to keep the door assemblies in operating condition. For these types of building owners, they might have the ability to perform the safety inspections of their fire door assemblies, provided their personnel can demonstrate that they have achieved an acceptable level of knowledge and expertise to the AHJ's satisfaction. Completion of training programs that prepare individuals to perform inspections of fire door assemblies will increase the AHJ's confidence in the maintenance personnel's ability to perform these inspections.

The decision to select a fire door assembly inspector is one that should be based on the types of fire door assemblies in the building. The most common type of fire door assemblies are swinging fire doors with builders' hardware and are typically present in almost every commercial building or structure. However, some other types of fire door assemblies, such as horizontal sliding fire doors, rolling steel fire doors, etc., require the inspectors to be equally knowledgeable of these types of fire door assemblies. Fire door inspectors offer an array of services. Some fire door inspectors provide inspection and reporting services, while other inspectors offer additional services including performing repair work and ongoing service contracts to keep the fire door assemblies in working condition.

Owners seeking to hire inspectors of fire door assemblies need to request references and ask a few questions before deciding to hire an inspector. Relevant questions include:

- What types of fire door assemblies are you familiar with? What level of training have you completed?
- Are you a certified fire door inspector?
- How many years of experience do

you have with "these types" of fire door assemblies?

- Do you provide maintenance service for fire door assemblies?
- Do you offer ongoing service contracts for maintaining fire door assemblies?

NFPA 80 has required fire door assemblies to be maintained in operating condition for many years. Earlier editions of NFPA contained language that was vague, which made it difficult for the AHJs to enforce the requirements. The current edition of NFPA 80 lists specific items that are required to be inspected and tested on an annual basis, giving the AHJ the specific verbiage needed to enforce the directive.

AHJs rely on industry professionals to perform the inspections of sprinkler systems, fire alarms systems, and elevators. Likewise, as safety inspections of fire door assemblies become more uniformly required across the country, AHJs will rely on door and hardware professionals for these inspections. In order for the inspectors to earn the AHJ's confidence, it is imperative that these inspectors have the appropriate training and expertise that this new era of enhanced fire and life safety necessitates. 

Keith Pardoe, DAHC, CDC/CDT is Director of Education and Certification at the Door and Hardware Institute. He Oversees educational programs, technical and certification activities, development and strategies for new codes and standards, and can be reached at (703) 766-7024

Maintaining Life Safety Effectiveness

By Wayne Barrow

There are many facilities managers who have a good program in place for dampened duct inspection and maintenance but have never given a thought to inspecting the rest of the fire-resistive wall and ceiling assemblies and components; firestopping applied to the joints and penetrations in those assemblies and fire-resistance-rated doors, hardware and glazing. While the reasons for not inspecting these critical systems are varied, there are three critical reasons to inspect and maintain them and clear steps to take that will ensure the fire and smoke resistant assemblies will provide intended life safety protection.

Reason 1: The Codes Require Maintenance

While the International Building Code governs a building at the time of construction, the International Fire Code (IFC 2003) and the NFPA Uniform Fire Code (UFC 2006) provide the basis for keeping buildings safe over the course of their useful life.

The 2003 International Fire Code says in Section 703.1 Maintenance: *"The required fire-resistance rating of fire-resistance-rated construction (including walls, firestops, shaft enclosures, partitions and floors) shall be maintained. Such elements shall be properly repaired, restored or replaced when damaged, altered, breached or penetrated. Openings made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer openings and holes made for any reason shall be protected with approved methods capable of resisting the passage of smoke and fire."* (emphasis mine)

The UFC has very similar language and goes into greater detail in sections 12.3.2 and 12.7.5.1. Regardless of the governing code in the jurisdiction, local building and fire inspectors derive their authority for inspecting the fire-resistant systems, firestops and rated construction, from these codes. It is important to remember that code requirements are often created in response to real events that cause loss of life or property. From such events, codes are developed that attempt to put proactive measures into place to prevent similar future losses. Maintenance of rated assemblies and firestopping would not be required unless a serious threat to life safety existed from not doing so. Historical events have shown time and again that proper fire- and smoke-resistant systems preserve life and property while degraded or missing systems result in greater loss of life and property.

Reason 2: Your Building is Dynamic!

All buildings undergo change from additions and renovation over the course of their existence, but in today's world the pace of change has been accelerated. With the advent of energy-efficient HVAC and electrical systems, water and gas piping, many buildings have decommissioned old systems and created new penetrations for new systems. Upgrading computer systems often requires new data cable runs and penetrations in fire/smoke barriers; network upgrades that seem almost ongoing. All too commonly, new penetrations are made through existing firestopping and are never

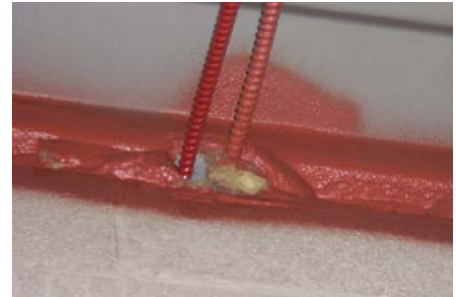


Fig. 1 - Here a new fire alarm line was passed through existing firestopping and never repaired creating a large opening for flame, smoke and toxic gasses.

repaired (as in Fig. 1). In addition, all the new cabling, medical gas and other building systems that are installed create additional fuel load for any fire that does start.

Reason 3: Even Small Holes Count

Data shows that even a pencil-sized hole in a wall can allow superheated smoke and toxic gases to migrate into a room and reach incapacitating levels in less than five minutes. While some believe their sprinkler system will extinguish a fire and prevent tragic loss of life and property, the reality is that even when they work correctly, sprinklers are only designed to suppress a fire, not to extinguish it. Smoke and toxic gases, which account for 75% of all fire-related deaths¹, may migrate through even the smallest openings in incapacitating amounts at great speeds. Plus, the water that helps suppress the fire may mix with toxic combustion gasses and create new chemicals that increase toxicity. With this awareness in mind, the four-inch penetrations in fire barriers for the new CAT-6 data lines take on a new and deadly appearance.

Steps to Compliance... and Life Safety

The first step to ensuring code compliance and adequate life safety is to begin inspecting existing fire and smoke barriers and the firestopping of each penetration. The key to this survey lies in knowing what to look for. If staff or contractors are not familiar with Listed Systems for rated assemblies and firestopping from Underwriter's Laboratories, Intertek or other directories it may be best to hire a reputable specialty firestop contractor to conduct the survey. The FCIA members list at <http://fcia.org> is an excellent place to begin looking for a qualified specialty firestop contractor to help you with this process. Regardless of who conducts the survey, building plans must first be gathered to determine where fire-resistive assemblies exist or should be. In absence of plans, there are ways to reconstruct the fire- and smoke-resistant barrier locations.

Once fire/smoke barriers are located, a methodical survey of each linear foot of them must be completed on both sides of each barrier as well as a survey of floor openings and penetrations. During this survey the following must occur:

Examine the Barriers

- Is the vertical barrier intact and extended fully to the to the next fire resistance rated or smoke resistant horizontal assembly?
- Is the horizontal assembly intact and extended fully to the exterior wall?
- Are both assemblies continuous to the next fire-resistance-rated or smoke-resistant barrier?

Some walls and floors may need repair where old ducts and sleeves have been removed.

Examine the Penetrations and Joints

Each penetration must be firestopped in accordance with a Listed System. Individual firestop products have no hourly rating and provide little or no protection by themselves. Only when the firestop product is installed in accordance with a Listed System can it be assured it will perform correctly in a fire. Listed Systems are published by independent third-party labs such as Underwriter's Laboratories, Omega Point, Factory Mutual and Intertek. These labs have tested firestop manufacturer's designs in accordance with the American Society for Testing and Measurements (ASTM) standards for through penetrations (ASTM E814 & or UL1479) and for joint systems (ASTM E 1399 & UL 2079). Each Listed System will specify what assembly it can be used in (gypsum wall, concrete/block, wood frame), what the penetrating item(s) and joints can be comprised of, and what firestop product can be used and to what depth, etc. it must be installed to. Here is where a specialty firestop contractor is critically needed. Sourcing these systems can be time-consuming, but ensuring every detail is correct - and ensuring they are installed correctly - is the only way the barrier penetrations and joints will withstand the passage of flame, smoke and toxic gasses in a fire.

- Is each penetration sealed according to a Listed System, or simply put, was the firestopping done right the first time? (see Fig. 2) Just having some "red stuff" around the edge of the penetrating item will not protect occupants or property in a fire.

• Recognize that drywall compound, also known as "mud," around a penetration does NOT create a firestop system and is NOT code compliant. Any penetrations that have drywall

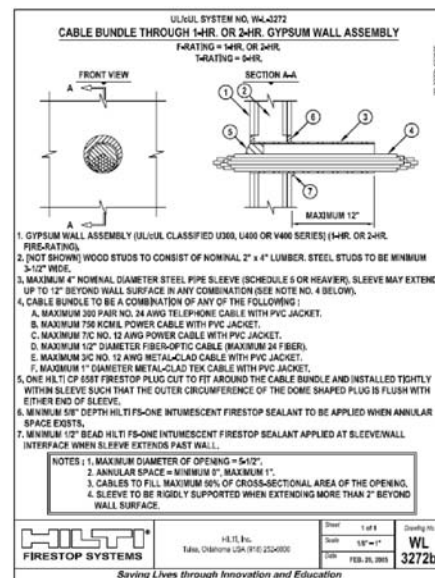


Fig. 2 & Fig. 2a - A survey will reveal if current firestopping is done right, in this case "no"...note the voids where mineral wool is showing, and spaghetti like pattern of sealant. Tooling may have prevented this possible life safety risk. Some systems allow additional cables to be added to these sleeves. Also shown, a UL Listed System for this penetration that will allow easy addition of cables in the future.

mud in them must be cleaned out back to the original gypsum wall-board, and firestopped in accordance to a Listed System.

- Is the top-of-wall joint sealed according to a Listed System?

- Are there any penetrations that do not match existing Listed Systems that will require an Engineering Judgment (EJ)? An EJ is similar to a Listed System and is requested from a manufacturer when no Listed System can be found for a particular firestop application. An EJ is based on Listed Systems that are similar to the application needing firestopping and on test data that allows a Fire Protection Engineer to interpolate a design that will work. EJ's need to be approved by an Authority Having Jurisdiction (AHJ).

Completing and Documenting the Work

Once the survey is complete, a plan to remediate deficient conditions must be developed. This is where a qualified specialty firestop contractor can provide significant savings and ensured life safety compliance versus using in-house staff or contractors who do not understand the zero tolerance listed systems protocol. Specialty firestop contractors have the expertise to source optimal Listed Systems from among the more than 8,000 available systems. They also have the skilled installers to ensure each Listed System is installed exactly to that system's design parameters. Many will be able to remediate deficient floor/wall assemblies as well. A specialty firestop contractor will also be able to

minimize disruptions to the building occupants while meeting infection control standards for healthcare occupancies and other building specific needs as well.

After the work is complete, a document should be produced detailing the work done which includes photos of all applications, along with their location and the Listed System used on that penetration or joint. This document is needed for comparison during future maintenance inspections. Fig. 3 and 4 show a post installation photo with label visible and the Listed System, or in this case, the Engineering Judgment used for the application.

Preparing for the Future

Once a full survey and remediation program has been completed, the building is able to move into mainte-



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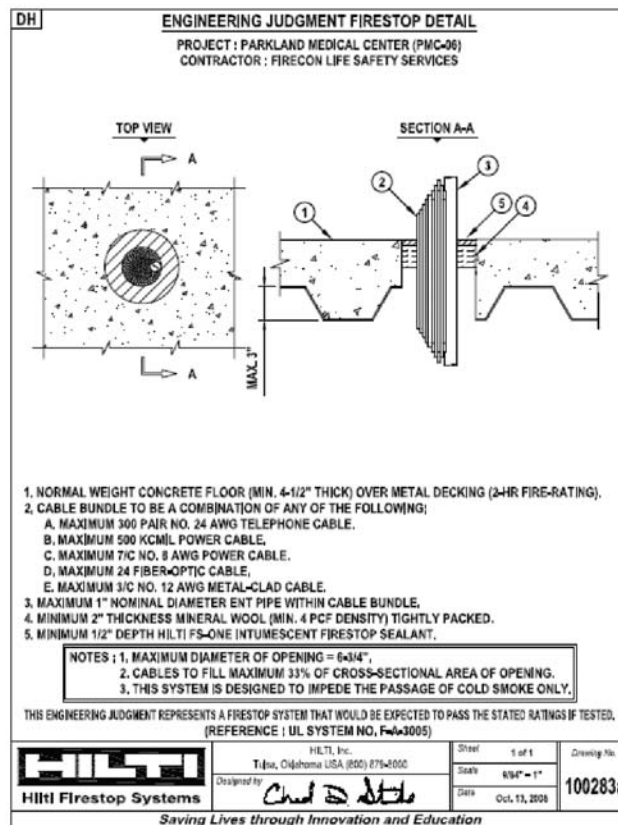
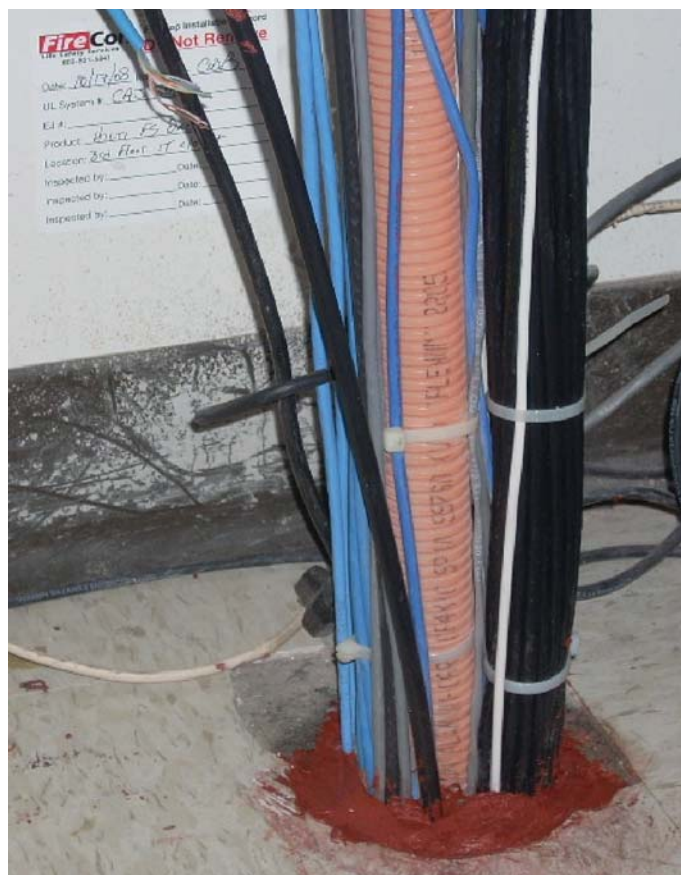


Fig. 3 & 4 - Post installation photo documentation showing the penetration as with firestop installed and the label in the background. The Listed System must accompany the documentation.

nance mode. This mode starts with staff training. Even if in-house staff is not going to be selecting and installing firestop systems in the future, they need to be aware of its importance and the right and wrong ways to do it. The staff members will be the ones dealing with and watching future contractors doing work in the building. With proper training they can help ensure that future work is done in accordance with the new building standards for work performed by trade contractors installing service items that require new penetrations in fire and smoke barriers. These building operation standards should be codified into a Barrier Penetration License.

Each trade contractor installing service items in the building should be required to agree to the license terms before beginning work. The license

should detail the work to be done that will impact each barrier they will penetrate and require the trade contractor to get building management and either directly, or through proper channels, AHJ pre-approval, for all firestopping related to the work. This pre-approval must include the actual installation drawings of the Listed Firestop System to be used for each penetration. It should also be required that each penetration be labeled in some manner with the Listed System number, name of the contractor, name of the installer, product used, and date of the installation (See FCIA's Manual of Practice for Identification Systems choices). A photo of each finished application with the label adjacent should be provided at the completion of work as shown in Fig. 3 and 4.

By recognizing the reasons given

here and following the steps outlined, your building will provide the passive fire protection that is so strongly needed for the life safety of its occupants. 🔥

1: Hall, Jr. John R. NFPA Fire Analysis & Research, Quincy, MA. "Burns, Toxic Gases, and other Hazards".

Wayne Barrow is the General Manager for FireCon Life Safety Services, a firestop and life safety compliance contractor serving New England from Nashua, NH. Barrow can be reached at wayne@firecon1.com.

The High Price of Neglecting Rolling Fire Door Testing and Maintenance



This rolling fire door failed to close during the Sofa Super Store fire. The heat sensing fuselink and spring release functioned properly. Non-compliant field mounted ceiling support angles fastened through the door hoods may have interfered with the coiled fire door curtains preventing them from closing.

To assure fire ready operation, codes require inspection and testing of fire doors at least once a year and that a written record is maintained for inspection by the local Authority Having Jurisdiction. Rolling fire door testing requirements are detailed in National Fire Protection Association bulletin 80 (NFPA 80). While NFPA 80 compliance is specifically addressed in the predominant codes, including the International Building Code® and International Fire Code®, this vital obligation can be overlooked by building owners, inspection officials and others.

The U.S. Fire Administration/National Fire Academy recently published a "Fire Door Inspections" training bulletin for fire and building inspectors that emphasized the code requirement for annual inspections "only by trained and competent persons who are familiar with the door assemblies being tested." In this bulletin, they reference rolling fire doors installed at the Sofa Super Store in Charleston, SC. Those doors, which had been modified after being installed, failed to operate during a fire on June 18, 2007 in which nine firefighters lost their lives. The City of Charleston Post Incident Assessment and Review Team report states that "the Sofa Super Store had not been inspected by the City of Charleston for

By John Polchin

It is crucial that rolling fire doors function as designed to provide continuity of fire resistance rated assemblies in the event of an actual fire emergency. Any breach in protective fire resistant walls during an actual fire can quickly lead to devastating consequences.

Unfortunately, the maintenance and testing of fire doors is often neglected. Whether this is because of ignorance, a desire to save money or the lack of local code enforcement is irrelevant. What is important is the loss of life and property that can result when this responsibility is ignored. And, sadly, there are examples where this very outcome has occurred.

code enforcement purposes since 1998" and post inspection photos of the doors clearly identify field mounted ceiling support angles fastened through the door hoods that may have interfered with the coiled fire door curtains preventing them from closing. Testing would have identified the modifications made to the doors and exposed their inability to operate.

Annual inspection of rolling fire doors requires that the door closes and opens smoothly, that all door fasteners are securely in place, that no other construction materials are directly attached to the fire door components and that fuselinks and chains are properly located and not painted or coated with grease or dirt. Annual testing of rolling fire doors requires drop testing of all detection/closing mechanisms to test for full closure and an acceptable closing speed and to reset the doors to fire ready mode. As stated previously, testing must comply with the requirements of NFPA 80 and a written record must be maintained by the building owner and the door company that tested the doors.

Rolling fire doors that do not pass inspection and testing should be fixed immediately or positioned to the fully closed position until repair parts can be obtained from the original door manufacturer or until approved retrofit operator components can be obtained and installed so that the doors pass the inspection and testing requirement. Again, had the Sofa Super Store fire doors been routinely tested, the outcome of the fire could have been a minor incident.

Even though the National Fire Protection Association, the U.S. Fire Administration and accepted codes state the requirements for rolling fire door testing, there is a disconnect when it comes to fire door testing and inspection enforcement. Along with

fire extinguishers and sprinkler systems, rolling fire doors are a part of the buildings life safety equipment and should be required by law to be tested and inspected on a not less than annual basis.

To help building owners meet their annual fire door testing obligation, manufacturers have evolved the design of rolling fire door closing systems to simplify the testing and resetting process. These advanced closing systems are designed to safely close doors at a consistent, controlled speed and are easily reset to fire ready mode by facility personnel once power is restored and the alarm system is cleared. These systems are ideal for applications where fire doors are connected into a central alarm system that is routinely tested or tripped, for recessed fire door applications or for any fire door application in which simplified testing and resetting is desired.

Because these superior fire door closing systems have been found to be so much safer and more reliable than traditional fire door closing systems, testing agencies and code referenced standards have been updated to allow the retrofitting of these systems to currently installed rolling fire doors, where appropriate. But, although these advanced door systems simplify the process, they do not eliminate the need for documented annual inspection and testing by a trained door systems technician.

With the regulations for testing and inspection currently in place, and with the availability of advanced automatic rolling fire door closing systems, building owners and managers need to be proactive to ensure that building occupants and property are protected and code compliant! Don't be held liable should a fire occur and the doors not perform as designed, resulting in catastrophic damage, injury or loss of life. Stating



The closing path of rolling fire doors are required to be free of any objects that may interfere with door closing. Routine testing draws awareness to fire door locations and the need to keep their closing paths clear.

that a local building inspector did not enforce testing of the doors won't indemnify anyone in the building management team of the situation. Take advantage of today's rolling fire door product offering and protect the people in your building, minimize potential loss of property and protect yourself from litigation! 🔥

John Polchin is the Marketing Director for Pennsylvania-based closure product manufacturer, Cornell Iron Works. He has been in the industry for more than 22 years and currently oversees the development and sales of the company's Emergency Response product lines. Cornell can be reached at www.cornelliron.com or (800) 233.8366.

Out of Sight, Out of Mind

Protection of through-penetrations in concealed areas of fire-resistant-rated walls

By Christine Reed

As our communities expand in size and population, there is a need for construction of new buildings in order to provide necessary city services and businesses. These buildings, constructed under the current series of codes, are new structures with all separation and compartmentation requirements built in and approved.

But what happens when a community does not have enough vacant land in order to build new buildings? One solution is to renovate existing buildings to accommodate the new owner or tenant(s). The renovations could include a variety of code requirements based on the use and/or occupancy of the building, possibly requiring separations, compartmentation, fire-resistance-rated corridors and/or stairways, just to name a few. Within the scope of these renovations, new installations of conduit, piping or cabling may be run above either the hard-lid or false ceilings to allow for the multitude of special needs for the new occupants. The installation of these components may pass through fire-resistance-rated construction meant for the compartmentation and separation of areas throughout the building. While this act alone is not an issue, the penetration locations are typically made above the ceilings which conceals the work and makes visual inspection and confirmation of penetration protection requirements difficult.

The concept of protecting penetrations through fire-resistance-rated walls is not a complicated one. Firestopping manufacturers provide effective products that become systems when installed to the classified system on the market that can be installed in and around the penetrations in order to provide an

equivalency rating of the wall. There are, however, long-standing enforcement concerns from the Authority Having Jurisdiction's perspective. In some cases, penetrations in the fire-resistance-rated construction for piping/conduit installations may not have any method of firestopping installed at all. Breaches in a wall may be made as part of last-minute construction changes, done by contractors without considering the ramifications that may be caused by breaching the wall.

Another concern of the code official is, while firestopping products have systems designs and specification sheets to guide the installer in the approved method of installation, those guidelines are not always followed as prescribed. For example, penetrations made too large may cause the need for excessive firestopping. The use of unapproved or non-listed materials to fill the cavity just before the listed insert classified system with putty or caulk is applied is another concern. In addition to creating an unsafe condition for the new owner or occupant of the building, problems with installation methods found by the inspector may create a delay in approval and progress of the project.

Because of the issues encountered with penetrations during field inspections, code officials wanted to address the issue of the identification of fire-resistance-rated construction after the building is occupied. Once the rated construction is identified, it makes it easier for the future construction trades and code officials to identify where through-penetration protection is located and required. During the International Code Council's Final Action Hearings in Minneapolis, Minnesota in September, the code

change proposal Item #FS-11 07/08 in the International Building Code was passed by the membership and requires permanent labeling on Fire resistance rated walls that have penetration protection requirements.

The labeling is required in accessible concealed locations with language stating that openings in the wall are required to be protected. With the passage of this code requirement, both installers and code enforcement officials will have a better understanding of the locations of rated walls both in new and renovated buildings. Since this labeling will most likely be found in concealed areas above ceilings, this will help address questions of protection requirements during future renovations and tenant improvements of buildings with rated compartmentation features.

With the recent downturn of our nation's economy, more building owners may be looking to reduce construction costs by renovating a building instead of constructing a new one. Retrofit applications in an existing building can be tricky when it comes to the maintenance of building construction and compartmentation requirements. However contractors, firestopping installers and the Authorities Having Jurisdiction within our communities working together can help make the process smoother and more cost-effective while ensuring that penetration protection requirements are met. 

Christine Reed is with the Central County Fire Dept., serving communities of Burlingame/Hillsborough CA. She is Co-chair of Building Standards Committee for California Fire Chiefs Association - Fire Prevention Officers Section, Northern Division, a Field inspector, plan reviewer and fire investigator. Reach Christine at creed@centralcountyfd.org

Industry News

Testing & Qualification News

Photoluminescent Safety Marking Industry & FCIA

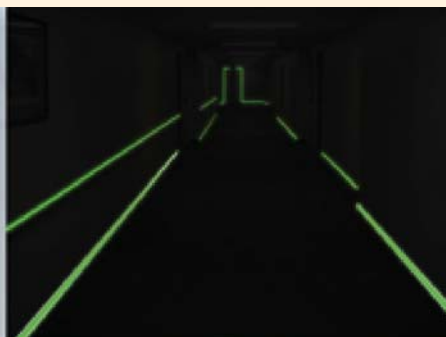
Photoluminescent safety products include exit signs, located high and/or low in egress systems, floor identification signs, path markings in stairwells on stair nosings, landings, handrails, the exit door frames and door hardware, in addition to obstacles in stairwells. These products, when designed, installed, inspected and maintained, provide obvious and intuitive ways out of buildings to occupants under normal, emergency and total blackout lighting conditions. They are aimed at increasing the confidence of the occupants as they exit buildings, with a goal of increasing evacuation speed.

At the ICC Final Action hearings in Minneapolis this September, a code proposal was approved in the 2009 International Building Code (IBC) and International Fire Code (IFC) that photoluminescent path markings must be installed in stairwells of all new and existing high rise occupancies. The IFC requirement is retroactive, meaning high rise building owners and managers must install these systems when the code is adopted in their jurisdiction. This new code requirement reflects the City of New York's requirement, implemented after 9/11's World Trade Center collapse and the work of the National Institute of Standards and Technology (NIST) and the work of Dr. Guylene Proulx of the National Research Council (NRC) of Canada.

While attending the ICC Final Action hearings, FCIA met Manny Muniz, of Manny Muniz and Associates LLC, consultant to the photoluminescent safety marking



Lights on

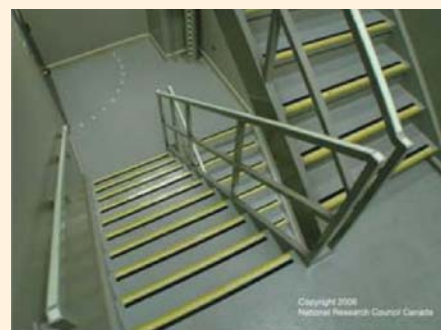


Lights off

industry to learn more about this industry. Muniz visited FCIA's Firestop Industry Conference & Trade Show, and presented why it makes sense for specialty firestop contractors to install photoluminescent markings in buildings.

"FCIA contractors are already working in and around the stairwell compartments. As a group, you understand systems selection, the importance of the compartment for egress, surface preparation and critical zero tolerance layouts needed for a successful installation," stated Muniz. FCIA specialty firestop contractors can bring value to clients, through this understanding of the systems-oriented layout and application to prepared surfaces.

Currently, the State of California, the State of Connecticut and the City of New York have adopted code requirements for these systems in various occupancies. Special amusement buildings have requirements for these products, for emergency egress from rides, as well. As the 2009 International Building and Fire Codes are adapted throughout the U.S. and overseas, photoluminescent marking systems will be required to be installed in high rise stairwells.



Watch <http://www.fcia.org> for more details about how specialty firestop contractors can recommit to the field, as many FCIA members already install these systems....and help the photoluminescent industry expand fire and life safety in buildings together through quality applications.

New UL Qualified Firestop Contractors (QFC) -

FCIA members Carolina Insulation Contractors, of Florence, S.C. and Firestop Logistics, of Nashville, TN became UL Qualified in the last month. Congratulations on this milestone.

UL's Betsy Titus reports that there are now 64 individuals who have passed the UL QFC DRI Exam, representing 47 potential companies, with 25 firms with applications in for audit. "We expect the four Qualified Firestop Contractor Firms to blossom into many more shortly", stated Betsy.



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New FCIA FM 4991 Approved Contractors -

Jeff Gould, FM's Manager of this program since its inception, reports, "FM Approvals is very pleased at the growth and acceptance of the fire and life safety concept through the quality process. I am pleased to be the original author of the program, and still servicing the contractors worldwide." Here's who became approved in the 3rd quarter of 2008:

- Al Swiss Insulation Company, LLC - Sharjah, UAE
- Alert Insulation Co, Inc - La Puente, CA
- Bartkowski & McDonald LLC - Oak Forest, IL
- Performance Contracting Inc. - Carmel, IN
- Performance Contracting Inc. - Memphis, TN
- Performance Contracting Inc. - Phoenixville, PA
- Performance Contracting Inc. - Richmond, CA
- F. Rodgers Corp - Anaheim, CA
- West Coast Firestopping Inc. - Anaheim, CA
- Karcher Interiors - Orange, CA

"Plus, we're finding that at least nine existing FM 4991 Approved Firestop Contractor Companies have additional people taking and passing the DRI Exam, to invest further in the quality process, and give a marketing advantage to their firm during contract negotiations. Currently, there are 57 FM 4991 Approved Contractor Locations, with 84 DRI's managing these various operations. We've experienced a 40% growth in FM 4991 Approved Firestop Contractor firms from 2007 to

2008." California, Texas, Illinois, Massachusetts, and New York lead with over 28 locations in the five states.

"FM Approvals has also introduced a publically available Approval Guide, where the FM 4991 Approved Contractors are listed prominently, seen by the industry widely. FCIA's website continues to list FM 4991 Approved Contractors as well." Visit <http://fcia.org/fm4991approval.php> to see the contractors, and learn more about how to get approved.



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UL Qualification & FM Approval Process & Contractors -

Are you in the process of getting qualified or approved? Are you looking for FM Approved or UL Qualified Firestop Contractors? FCIA offers resources for Members including FCIA's website, the FCIA Manual of Practice, FCIA Education at the FCIA Conferences, and at offsite locations. FCIA's FM & UL Pages list contractors who are FM Approved and or UL Qualified.

Code Corner

ICC Code Development Final Action Hearings -

ICC held final action hearings in Minneapolis, MN Sept. 17-23. Public comments on code proposals were voted on by the membership in attendance at the meetings. There were big changes regarding residential sprinkler system requirements in new construction...a new mandatory requirement and terrorism resistant buildings.

There's some interesting dynamics going on in the International Code Council code change hearings. Large cities are starting to adapt the International Family of Codes, and amending them to add fire protection through fire resistance and other measures. New York, California (Los Angeles and San Francisco, Orange County) have adapted, and amended the code. Chicago is reviewing it as well.

As the large cities get involved in the ICC Process, changes may occur naturally. Most of these cities use Total Fire Protection as their theme, with higher structural fire ratings, more Effective Compartmentation, detection and alarms plus sprinklers and occupant education. The new International Building, Fire and other codes will be out in March 2009.

FCIA and UL Announce Dates for DRI Examinations & Education - FCIA supports the FM 4991 Program and UL Qualified Firestop Contractor Program with the FCIA Manual of Practice and an Education Program prior to UL & FM administering the exam. Visit <http://fcia.org/articles/events.htm>.

NEW FCIA Insurance Program - What's the second largest expense of an FCIA specialty firestop contractor firm after labor? The answer is insurance. FCIA members now have access to an FCIA endorsed insurance brokerage company that knows what we do every day and why we do it.

The Readington Burke Insurance Agency rolled out a custom program for general liability insurance, with the largest insurance wholesaler in the U.S. and the

Hartford Company, at the Firestop Industry Conference & Trade Show recently.

Readington Burke can represent your company through creating a focused presentation package that underwriters need in order to get the best coverage, lowest cost for your firm. Is your company FM 4991 Approved or UL Qualified? It may mean up to a 10% Discount on Workers Compensation Insurance. And, the more firms that choose Readington Burke, the better rates we can negotiate as a group with the insurance companies.

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Life Safety Digest 2009 Industry Calendar

Feb. 2 to 6

World of Concrete, Las Vegas

Feb. 26 to 28

International Concrete Exposition,
National Concrete Masonry
Association, Indianapolis

March 8 to 11

ASHE 2009 International
Conference & Exposition on Health
Facility Planning, Design and
Construction, Phoenix

March 24 to 28

AWCI Convention and INTEX Expo,
Nashville, Tenn.

April 20 to 25

FDIC, Indianapolis

April 28 to May 1

FCIA Education and Committee
Action Conference
Northeast U.S.

April 30 to May 2

AIA 2009 National Convention &
Exposition, San Francisco

June 8 to 11

NFPA World Expo & Annual
Convention, Chicago

June 17 to 19

CONSTRUCT2009, CSI Convention,
Indianapolis

June 28 to 30

BOMA Annual Conference,
Philadelphia

Oct. 24 to 31

ICC Code Development Hearings,
Baltimore

Sept. 16 to 25

DHI's 34th Annual Conference &
Exposition, Orlando

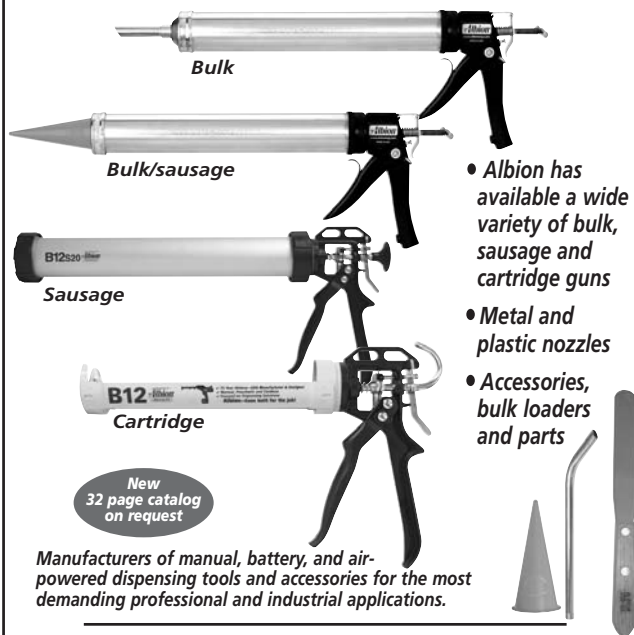
Nov. 1 to 4

ICC Annual Conference, Baltimore

Nov. 10 to 13

FCIA 10 Year Anniversary &
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3"	PECORA AC-20 FTR	PECORA DYNATROL II PECORA AC-20 FTR	
2"	SONNEBORN NP-2 PECORA DYNATRED PECORA DYNAFLEX	LYMTAL 880 LYMTAL 881 LYMTAL 830	SIKA 2 CNS GE PENSIL 300 GE PENSIL 300 SL
3/4"	PECORA 864 PECORA AC-20 FTR PECORA DYNATROL II GE SIL PRUF GE ULTRA GLAZE GE EP 600 GE PENSIL 300 DOW CORNING 790 DOW CORNING 795 SIKA SIKAFLEX 2CNS SIKA SIKAFLEX ISLM TREMCO VULKEM 921 TREMCO VULKEM 922 LYMTAL 880 GB LYMTAL 881 LYMTAL 830 CARLISLE COATINGS QSC 1026 C.R. LAURENCE CRLM64		



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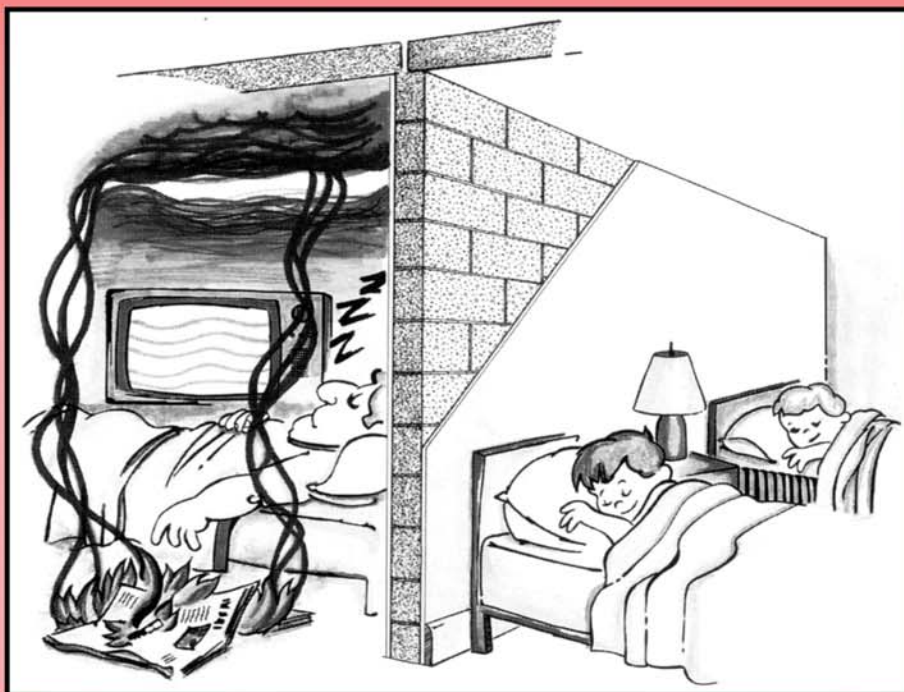
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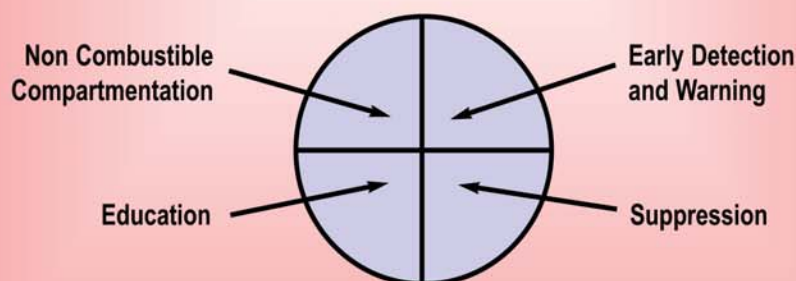


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