

Spring 2015

The Magazine of Effective Compartmentation



Life Safety DIGEST

In This Issue:
Fire-Rated Expansion Joints
Specifying NFPA 285 Testing
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College Campus Fire Inspector Speaks

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On the Cover: The Johnson & Whales University Center for Physician Assistant Studies in Providence, RI, uses a 60 minute rated fire rated glazing to protect people and property, yet provide clear view through the rated assembly. Technical Glass Products Photo.

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Editor's Message

Designing, constructing and operating buildings for fire and life safety is critical to safety of occupants. When many individuals occupy or reside under one roof, the need for building owners and managers to think like a life threatening event can happen at any time.

As Phil Chandler states, "Paint a picture of the building on a really bad day, the day after a fire". Then, ask yourself, has the fire resistance rated construction been maintained as diligently as the sprinkler system? The fire alarm system? The exit doors?

As the fires of the last few days have pointed out, even in North America, we are vulnerable to non arson based fire spreading rapidly. Fire can spread quickly for a lot of reasons. That's why the combination of fire resistance, alarms, sprinklers and education of the occupants about what to do and where to go in event of an emergency is so important.

Statistics can be used for a lot of reasons to prove buildings are safe. In North America, there are about 11,000 buildings 20 stories and higher. Of those buildings, 70% are in six cities including Chicago, New York, Los Angeles, San Francisco, Honolulu and Toronto. The common thread in these cities is an older stock of buildings and also high fire resistance ratings. In the older buildings, sprinklers are being added for additional life safety. Alarms were added long ago. Fire resistance rated compartmentation existed as the primary means of defense in the structures.

There are those who state that because sprinklers are reliable, buildings are safe. Really? Did the fire resistance not provide anything? The notification system and egress design? The education of the occupants? It is FCIA's perspective that fire resistance, alarms, sprinklers and education of the occupants, provides what is needed to result in safe buildings.

In this issue, you will find articles pertaining to educational buildings - low rise and high rise - and a look at codes, the DIIM for fire resistance rated SYSTEMS so they get installed in buildings properly.

The protection provided by fire resistance rated and smoke resistant construction during a burning apartment fire gives inhabitants a few more precious minutes to escape and protects the fire service who must search, rescue and extinguish during their operations.

FCIA believes that when combining effective code regulations and good specifications, plus enforcement in the field, means the DIIM of Effective Compartmentation (Design, Installation, Inspection,

and Maintenance-Management) has taken place. Through the DIIM, more reliable building safety can be achieved meaning less lives are lost to tragedy.

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

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Fire-Rated Expansion Joints: Innovation Meets Demand

By Dennis Callahan

An Evolving Built Environment

Look around at today's construction. What was thought to be revolutionary a few years ago, both in design and engineering, is now fairly ordinary. Within a short period of time today's structures will be relatively commonplace and dated. The key is to anticipate and create for these future demands from the building industry. To achieve success it is necessary to continually innovate to provide products and solutions that meet these needs. The performance growth of fire-rated expansion joints is a prime example of products keeping pace with construction demands.

Evolving Expansion Joint Performance

Because expansion joints are called upon to perform a growing list of functions, they are now engineered to truly be an integral part of a wall or flooring system. No longer are they a dissimilar filler for a structure's necessary expansion gaps. Structural expansion joint openings bifurcate the building elements they are designed to protect from thermal, seismic, wind and loading forces. Consequently, they are literally a gap through, or a breach in, the function intended by the foundation, wall, deck, plaza, concourse, roadway, floor, or roof they divide. The job of restoring these functions falls to the material designed to fill the expansion joint opening. These functions (all performed while handling the movements expected in the structure) include: maintaining thermal conditions, sealing out wind and water, and suppressing the transmission of intrusive sound. If this weren't enough, expansion joints now are increasingly called upon to perform a key role in life safety—containing the spread of fire.



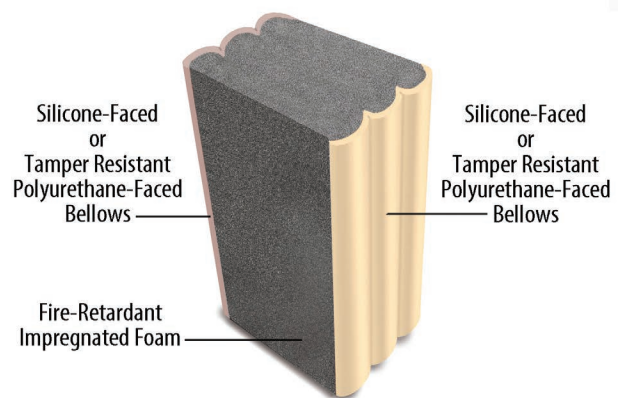
Traffic-grade, fire-resistant expansion joints handle the rigors of both load bearing vehicles and extreme expansion gap movement due to external thermal conditions. EMSEAL Photo

Hybrid Sealants

The construction industry has readily accepted tensionless, pre-compressed exterior-coated foam expansion joints to restore the necessary demands of wall and floor systems in these openings. These systems are constructed of acrylic-impregnated/infused foam and then coated with a flexible exterior sealant specifically chosen to handle the wall or floor environmental, occupancy, and aesthetic requirements. These single-unit expansion joints take full advantage of the advancements in composition of the foam, impregnation and sealant technology. The result is true hybridization—the preservation of the best features of the underlying technologies while removing their weaknesses.

The "Holy Grail"

The widespread success of these hybrid, pre-compressed sealants left just one outstanding feature to make them truly "the holy grail" of expansion joints—fire resistance. The year 2009 saw this dream realized with the advent of a significant breakthrough in expansion joint sealing—the all-in-one, fire-rated, watertight, thermally insulating, sound suppressing, precompressed foam sealant for small and large movement joints. Installed entirely from the top side of floors or decks and from just one side of walls, these systems install rapidly, free of any invasive anchors, and have revolutionized installation efficiency while dramatically uncomplicating trade sequencing—particularly on floor and deck installations. No longer is it necessary to access the underside of slabs to achieve fire protection, and no longer do HVAC, electrical, plumbing, ceiling, and fireproofing applicators need to be coordinated around the work of the expansion joint installer.



Precompressed foam sealants are constructed from fire-retardant foam coated with silicone-faced tensionless bellows to allow for a watertight seal, increased movement capabilities, thermal insulation, and sound attenuation. Pick-resistant polyurethane is an available alternative outer coating. EMSEAL Photo

The Next Generation of Fire-Resistant Precompressed Sealants

With building specifications requiring greater performance, the capabilities of expansion joints have had to continually increase. One key area of demand is in the requirement for increased movement capacities driven largely by seismic movement requirements. Coupled to larger joint openings (up to 10-inches (250mm) or more), the demands of movement on expansion joints is greater than ever before.

The ability of an expansion joint material to expand or contract, in consort with the movement induced in a building or structure, is fundamental to the performance and durability of an expansion joint product. The next generation of fire-resistant, precompressed coated foam sealants now meet these demands while still remaining free of tensile stresses in their coatings or at their bond lines. These expansion joints, with a UL-certified, tested and listed system with a 2-hour fire rating, now supply movement capabilities of 100% of the nominal gap width (50% expansion and 50% compression of the expansion joint). This advancement—doubling recent movement of the first generation—allows for design flexibility in walls and floors previously unmanageable.

Further advancements revealed in the latest 2014 series of Underwriters Laboratories testing of these technologies are: 1) the elimination of flexible, intumescent layers; and 2) settling of controversies surrounding the role that foam laminations play in the build of these materials.

Intumescent Bellows as an Additional Fire Barrier

The first achievement of a fire rated, precompressed foam sealant was no easy feat. The costs of testing at UL don't come cheap either. The first line of products to successfully pass both the thermal cycling, seismic cycling, and burn and hose stream (in the case of wall joints) tests at UL, incorporated a flexible intumescent coating on the fire exposed side of the products. The result was an easy pass with a substantial safety margin. This comfortable success made it possible to bring the benefits of the technology to the marketplace in order to begin to recoup the initial R&D investment while additionally laying out a path of further iterative improvements. The obvious iterations to consider were, reduced depth, reduced density of impregnation, modification of impregnation, and elimination of intumescent layer.



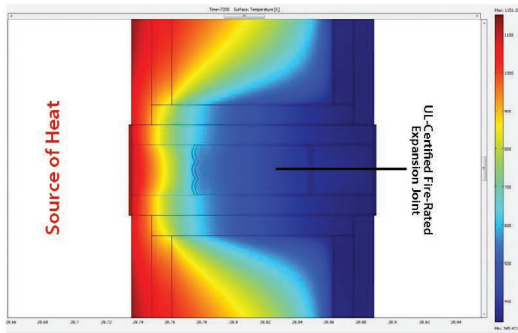
Vertical installation of a single-unit fire-rated expansion joint installed in a wall. UL-certification applies to walls constructed of fire-rated concrete, concrete blocks or gypsum. EMSEAL Photo

The result of the next generation testing are 2-hour fire-resistance-rated systems for walls and floors with twice the movement of the original versions and without the need for the flexible intumescent coating(s) on the fire side(s).

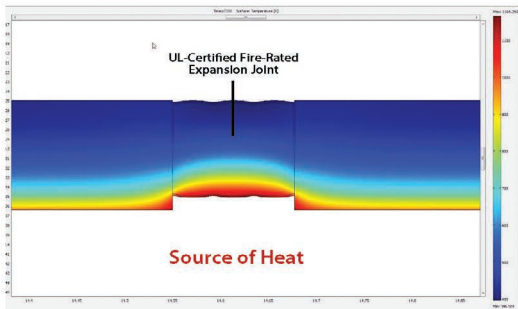
Increased Performance to Meet Increased Demands

Single unit fire-rated precompressed foam expansion joints are increasingly able to remove the need for cumbersome and moisture sensitive fire-blankets, low-movement mineral wools, fire blocks, caulks, plates and other components typically assembled in the field with the intention of meeting the performance and life-safety requirements of sealing and bridging structural expansion joint openings.

Not only can this next generation of fire-and-water-resistant hybrid expansion joint sealants take the heat and cycling of the fire test method for joints, UL-2079, they are still able to maintain a thermal and acoustic seal and maintain water tightness even under hurricane and tornado wind driven rain conditions.



Finite Element Analysis: Expansion Joint in Gypsum Wall (2-hours)



Finite Element Analysis: Expansion Joint in Concrete (2-hours)

Finite Element Analysis shows the expansion joints maintaining their fire-retardant integrity at 2-hours of exposure. As seen in the designation of the cooler blue areas, these expansion joints remain consistent in the fire-rated thermal qualities of the walls and floors that they are sealing. EMSEAL Photo

With the increase to 100% total movement capability and simplified build, these new fire-retardant precompressed coated foam sealants effectively handle the new and retrofit construction requirements of today's buildings and structures.

Fire-rated, precompressed foam expansion joints are able to meet the engineering challenges of present day construction and are increasingly a clear choice for any life-safety oriented designs, construction and installation. 🔥

Dennis Callahan is the Director of Business Development at EMSEAL Joint Systems, Ltd. Located in Westborough, Mass. and Toronto, Ontario, EMSEAL has been manufacturing and supplying innovative and high quality expansion joint systems to the architectural and construction industries since 1979. EMSEAL developed the current technology of fire-rated expansion joints and has been marketing them to the market since 2009. This patented EMSHIELD line of fire-rated products includes WFR, DFR and SecuritySeal SSW and SSF. For more information visit www.emseal.com. Dennis can be reached at dcallahan@emseal.com



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The Inspector

By Phil Chandler

December 7th, 1941—a dark and somber day in our history—a day that must not pass unnoticed. As I pound out my final thoughts for the year, I too cannot be but moved by the obvious lessons this infamous event offers us all, the campus fire community no exception. Bad things come our way without warning and often as not, when we are least prepared. As I never tire of repeating, fire does not discriminate!

Just as the dastardly and unprovoked attack on Pearl Harbor demonstrated, there are those out there that do not play by the rules we all venerate. There are groups and individuals willing to inflict pain and suffering on the unsuspecting at any time and place. It really doesn't matter if the harm is perpetrated in service of some wayward ideology or a result of mental depravity; the destructive outcome is the same.

The treacherous work of an arsonist on the campus can be our Pearl Harbor. We too can be caught off guard and unprepared. Yes, all fires come with a level of unpredictability, but in general we recognize certain general cause and effect relationships. We understand that commercial kitchens present an above average risk of fire during cooking operations and we protect ourselves accordingly. Likewise, the storage and handling of flammable liquids and gasses present understandable risks that can be routinely mitigated. And of course, hopefully, we recognize that student housing represents a perpetual accident waiting to happen and appropriately attend to this hazard. But how do we protect ourselves from a sick mind?

One might argue that close adherence to our building and fires codes will assure that we are ready for all contingencies. That means all fire resistive construction is uncompromised, all life safety systems are reliably inspected, tested and maintained and fire safety and evacuation plans are in place and routinely practiced. Of course, this is always the goal of the fire inspector, but unfortunately in the real world, difficult to achieve.

Absent unlimited resources, most property managers try to protect their assets based on the most likely perceived threats, not all possible perils. Unfortunately, few algorithms include the possibility of an itinerant wandering in from the street, stuffing a latrine with student newspapers, dousing it with charcoal lighter fluid and igniting it with a cherry bomb. You can't make this stuff up! What a world we live in! Yet every year or so, on a campus near me, such events, or crazier ones occur.

As I see it, the job of the fire inspector is to paint a picture of every building on a really bad day, the day after a fire. Yet despite our heartfelt efforts and our dire warnings and pronouncements, we are often dismissed as prophets of doom and gloom. Especially so when we talk of madmen on the loose with matches in hand. Fire safety professionals, however, know the reality. We review the statistics and know that arson is far more prevalent on the campus than many in academia care to acknowledge. Yet until such time as an incendiary fire occurs in a campus building, our opinions remain—academic.

After a campus fire, attitudes change, for a while. When the administration has to cancel and reschedule classes because of a small “nuisance fire,” new thinking emerges. When carpet needs to be replaced, walls repainted, and mold abated, questions are asked: “What could we have done differently? How could we have avoided this expense and disruption?”

The fire inspector, resisting the urge to shout out “I told you so,” will again reiterate the call for close adherence to the codes before us. We will patiently remind everyone that our codes were “written with a quill dipped in blood.” That means if it's in there, it has already happened, many times, and will likely happen again.

We also should take the opportunity to reintroduce the common wisdom of the street: “Pay me now or pay me later.” Spending the time and money needed to keep all of our opening protectives working properly will most certainly reduce the cleanup expense of a fire, to say nothing of possibly saving a life. It's amazing how much damage even a fire in a waste basket can produce. Of course these recommendations apply to all fire scenarios, not just those intentionally set. Yet it's these malicious occurrences that seem to get the most attention.

As random as acts of arson are, we can still protect ourselves to a large degree. For starters, we need to stop calling small unexplained fires “nuisance fires,” as that expression serves to convince us that small fires are inevitable, unavoidable and of little consequence. Nothing can be farther from the truth. We must treat every suspicious fire in a structure as a serious crime—in New York State a felony. No more is “boys being boys” an acceptable explanation for a variety of offenses, arson among them. Let's not forget the lesson of Seton Hall!

continued on page 20

2015 International Codes Support Resiliency, Safety, Innovation, Affordability in the Built Environment



Jurisdictions and other code users can begin today to prepare for adoption and use of the newest building safety codes. The 2015 International Codes (I-Codes) developed by International Code Council Members and other safety advocates at public hearings using the governmental consensus process.

“The 2015 International Codes reflect the most advanced building science construction methods and practices available,” said ICC CEO Dominic Sims, CBO. “The I-Codes are a comprehensive and coordinated family of codes that support the construction industry to achieve resiliency, safety, innovation and affordability in the built environment.”

The 2015 I-Codes provide flexibility for designers without compromising safety. Many 2015 I-Code sections have been reworded or reorganized to clarify requirements so they can be applied consistently. The 2015 I-Codes address design and installation of innovative materials and encourage the use of new and smarter technological advances.

A variety of book formats are available to code users for added convenience. Code users can select from soft cover, loose leaf, eBook, or PDF download. A new feature added to the 2015 I-Codes in PDF is the Redline version. This new component, included with every 2015 I-Code download purchase, displays deletions and revisions in red and blue font allowing the reader to quickly spot changes and determine the

specifics of each change. This option requires a PDF Reader and can be used on mobile devices.

All 2015 I-Code print and digital purchases include a free subscription to ICC’s new Code Alert service that provides critical code updates and free access to videos, excerpts from support documents and training resources.

Helpful resources that assist code users in learning and applying the 2015 I-Codes are scheduled for release throughout the next year. The Significant Changes series, Code and Commentary series and Study Companions will be released this summer, fall and winter, respectively.

First released in 2000, the family of International Codes continues to be the only coordinated and correlated set of construction codes to address building, fire, plumbing, mechanical, fuel gas, property maintenance, zoning and energy efficiency.

The International Code Council is a member-focused association. It is dedicated to developing model codes and standards used in the design, build and compliance process to construct safe, sustainable, affordable and resilient structures. Most U.S. communities and many global markets choose the International Codes. 🔥

Specifying NFPA 285 Testing

By Joseph Berchenko AIA, CSI, CCS

Editors Note: Some urban Education and Dorm occupancies use high rise buildings. With more energy efficiency being demanded by Energy Codes, wall fire resistance becomes critical to safety. This article focuses on fire testing these area.

Summary

NFPA 285, *Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components*, is required by the 2012 Edition of the *International Building Code (IBC)* for testing certain wall assemblies. The test is performed on both load-bearing and non-load-bearing wall assemblies, the standard's title notwithstanding. Successful completion of the test demonstrates the ability of an exterior wall mockup to contain vertical and horizontal flame spread across the face and through the core of the wall.

Because of the increased use of continuous insulation in building envelopes, enforcement of provisions requiring NFPA 285 testing has recently been stepped up, sparking discussion and concern on Internet bulletin boards and in professional journals.

Specification writers must learn where and how to specify compliance with NFPA 285. Additionally, designers must take care in matching details of project-specific wall assemblies to tested assemblies.

Code Requirements

The IBC generally requires that exterior walls in Types I, II, III, and IV construction be constructed of noncombustible materials. Combustible insulation and wall facings are allowed in Types I, II, III, and IV construction in some cases, but their uses are tightly regulated often including a requirement for NFPA 285 testing.

Perhaps the most far-reaching mandate for NFPA 285 testing occurs in Chapter 26, which regulates plastics such as foam insulation. Testing is required for the following:

- *Section 2603.5.5.* Exterior wall assemblies of Type I, II, III, and IV construction of any height containing foam-plastic insulation.

Compliance with 2603.5 is also mandated in some cases by reference from Section 2612 which regulates the exterior use of fiber-reinforced polymer materials.

Several other references to NFPA 285 are included in the IBC. One instance relates to exterior walls in tall buildings that include water-resistive barriers. Because water-resistive barriers are a common feature of modern construction, this requirement impacts many high-rise buildings. NFPA 285 testing is required for the following:

- *Section 1403.5.* Exterior walls containing combustible water-resistive barriers in Types I, II, III, and IV construction when more than 40 feet (12,192 mm) above grade.

During the 2012 Code Change Cycle, the National Institute of Building Sciences (NIBS) and the American Institute of Architects (AIA) jointly sought and were granted a modification clarifying and providing exceptions to the water-resistive barrier rule that will appear in the 2015 Edition of the IBC. (Attempts to modify IBC Section 2603.5.5 were unsuccessful.) In 2015, IBC Section 1403.5 will include the following exceptions:

- Noncombustible walls with water-resistive barriers concealed by a minimum thickness of certain weather coverings and not containing foam-plastic insulation.
- Noncombustible walls with water-resistive barriers that contribute only minimally to fire loads. Because the criteria for the exception are based on technical performance requirements like maximum peak heat release rate, total heat release, effective heat of combustion, and flame-spread and smoke-developed indexes, the final determination of which water-resistive barrier materials qualify for the exception must be determined on a case-by-case basis.
- Window, doors, and associated flashings.

Other sections of the IBC also require NFPA 285 testing of individual components and systems. These include the following:

- *Section 1407.10.4.* Metal composite materials (MCM) systems. MCM panels are composite wall panels with metal facings and thin plastic cores.
- *Section 1408.* Exterior insulation and finish systems (EIFS). Although NFPA 285 is not specifically invoked by name, these systems are required to meet the performance characteristics required in ASTM E 2568 which mandates NFPA 285 compliance. (See Table 3 of that standard.)
- *Section 1409.10.4.* High-pressure laminate (HPL) systems for exterior use. These are plastic laminate panels defined in the Code as "high-pressure decorative exterior-grade compact laminates."
- *Section 1509.6.2.* Panels that are part of an exterior wall system used to screen mechanical equipment mounted on roofs.

Finally, IBC Section 718.2.6, Exception 3 allows fire blocking to be eliminated in concealed spaces behind exterior wall coverings when the wall covering has been tested according to NFPA 285.

NFPA 285 Testing

The test requires a wall assembly mockup spanning two stories, with a test room on each floor. A single window opening is provided from the first story where a test burner is located. The burner is used to send a plume of flame through the window opening and up the exterior surface of the wall above. This simulates a fire that begins in an interior space, breeches a window, and spreads upward along the wall face. Such a scenario replicates a situation common in real-world fires.

Two areas of mockups are of special concern: openings into wall cavities above window heads and facing materials used on the wall exteriors.

For walls with cavities containing foam-plastic insulation or combustible water-resistive barriers, the protection of the cavity is paramount. In addition to the fire-resistive properties of the materials, successful test completion generally requires that the wall cavity be protected by a continuous steel shelf angle and mineral-wool fire safing, or other fire-blocking material. The configuration, thickness and arrangement of fire-blocking materials for each test are detailed in the test report.

In the case of combustible wall facings such as EIFS, MCM, HPL, and foam-insulation-core panels, the materials must be sufficiently fire resistive in and of themselves to withstand flame exposure for the duration of the test.

Unfortunately, there is no third-party compilation of assembly tests, unlike the thousands of variations of fire-resistive wall assemblies tested and documented in the FM Global *Approval Guide*, Intertek ETL SEMCO *Directory of Listed Products*, and Underwriters Laboratories Inc. *Fire Resistance Directory*. Numerous proprietary NFPA 285 tests have been performed by manufacturers, however, and may be accessed on their websites; verify with selected manufacturers. To assure compliance for wall assemblies, it is important that designers study successful assembly tests and detail project-specific assemblies that exactly match tested assemblies.

For very large projects, consideration might be given to creating mockups of significant or unusual wall configurations and requiring preconstruction NFPA 285 laboratory testing. Although this is an expensive proposition, in projects of sufficient size it may help smooth permit review and will provide assurance to the Owner that the design provides adequate safety.

Specification Issues

For Types I, II, III, and IV construction, requirements for NFPA 285 fire testing for individual products should be addressed in each section containing combustible exterior wall components. For example, NFPA 285 testing may be required in sections containing foam insulation, sheathing, foam-insulation-core panels, MCM panels, and weather- and

water-resistive barriers, and elsewhere as needed. In the case of EIFS, requiring compliance with ASTM E 2568 is adequate.

It is tempting to simply add a general requirement in the Part 2 "Performance Requirements" Article in each affected section calling for indicated assemblies to be NFPA 285 compliant. This is pretty open-ended, however, and because it addresses the assembly, may imply that the Contractor is responsible for, or can alter, the assembly design. The specifier more commonly just wants to convey to the Contractor that a manufacturer has tested the wall assembly shown on the Drawings with a variety of acceptable products; not that the Contractor must take full responsibility for the wall's code compliance.

For example, an insulation manufacturer advertises an exterior wall assembly that has been successfully tested with a dozen different water-resistive barriers. The specifier may wish to instruct the Contractor that any of those, but only those, water-resistive barriers are acceptable. I believe the best way to do this is add an NFPA 285 testing requirement in the water-resistive barrier section at that product type. At ARCOM MasterSpec, we provide the following language for such purposes: "Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly."

Compliance of tested components is indicated in manufacturers' product data sheets, similar to other test compliances. A full copy of test results is not typically required by codes authorities, although the Architect may request a copy of product data, tests, or other documentation in the "Informational Submittals" Article in Part 1 of each affected section, if desired. The Contractor, who is assigned responsibility for securing the building permit by the AIA A201 *General Conditions*, is responsible for submitting documentation to the code authority; it is not necessary to detail the Contractor's submittals to codes offices in the technical specifications.

Some combustible products and systems may have ICC Evaluation Service (ICC-ES) reports in which they are explicitly approved for use in or on exterior walls of buildings of Type I, II, III, and IV construction. Many code authorities are willing to accept these reports as evidence of compliance.

Conclusions

Although the construction community must undergo a learning curve for NFPA 285 testing, protection of the health, safety, and welfare of building users remains the highest professional obligation. Strict code compliance is part and parcel of this obligation. Increased understanding and compliance with NFPA 285 code provisions will ultimately create better, safer buildings. 🔥

Joseph Berchenko is Assistant Director, Architectural Specifications at ARCOM. www.arcomnet.com.

Firestopping & DIIM – 2015

By Bill McHugh, CSI, CSC

Firestopping & Effective Compartmentation – Diim’s Now...and the Future

Fire resistance rated construction in buildings consists of many components. Fire resistance rated walls and floors are the base for the box that creates Effective Compartmentation.

The fire and smoke protection features, as they are called in Chapter 7 of the International Building Code, provide continuity through protection of penetrations, joints and openings in the fire rated wall and floor assemblies. These Features of Fire Protection include firestop systems, fire and smoke dampers, fire rated glazing and both rolling and swinging doors and builders hardware.

The building codes dictate minimum requirements for the Features of Fire Protection. These tested and listed systems provide continuity of the fire and smoke resistant properties as well. Regardless of code, instructions include ‘maintain the fire resistance of the assembly’ through tested and listed systems. There are a few generic concrete materials exceptions for maintaining fire resistance for penetrations through concrete or masonry walls in Chapter 7. Starting 14 years ago, the firestop contractors have been working to build better systems, focusing on the proper Design, Installation, Inspection and Maintenance-Management (DIIM) of each Fire and Smoke Protection Feature. These features keep the continuity of the fire resistance rated assembly working to protect people in buildings.

What is Involved With DIIM

Actually, it’s DIIMM. The second M is for Management. Once constructed, Fire and Smoke Barriers, (International Building Code) Fire Separations (National Building Code of Canada), are breached by penetrating items, joints, gaps and openings. Back to the DIIM-M. The barriers need to be managed for the building’s life cycle.

The first component is the **D-Design. Design** includes a Specifier; CSI’s Certified Construction Specifier, CSC’s Registered Specifications Writer. These parties, and others, specify tested and listed systems. These are designed by manufacturers who submit products for testing at labs such as Underwriters Laboratories, LLC, (UL) and Underwriters Laboratories of Canada (ULC), FM Approvals (FM), Intertek and others.

The tested and listed systems plus manufacturers installation instructions and safety data sheets provide the “suitability for use statements” for the use of

the fire resistance and smoke resistant products in specific applications. These “Systems” are not “Systems” until installed in the exact configuration as represented in the tested and listed system design. The manufacturers continue to develop tested systems for competitive and better systems, regardless of fire protection feature industry.

The DIIM

Testing of products at laboratories like UL-ULC, FM Approvals, Intertek, provides the suitability for use of products as fire rated doors, glazing, firestopping, dampers and more. After the products are manufactured, they are shipped to distributors, contractors and jobsites. Chapter 3 of the 2014 Edition of the FCIA’s Firestop Industry Manual of Practice has a section on materials that includes many sections, a few of which are transport, delivery and storage. Each product has limitations that can be found on the manufacturers product data sheets, installation instructions and safety data sheets.

As part of the DIIM **the firestop contractor must understand the conditions in the field, select the right firestop system, then the rest of the process starts....Install, Inspect and Maintain.**

A study of the fire resistance industries shows that various pieces of the “DIIM” philosophy are implemented in industries. In Firestopping, all of the “DIIM” has been addressed

I-Installation

In North American and the Middle East, Caribbean, South America, the firestopping industry has focused on the **DIIM**. For the **I-Installation** part of ‘DIIM’, the firestopping industry has focused on the company through third party agency accreditation, then education of the workforce -contractor and inspector personnel - through its new Firestop Containment Worker Education Program.

How? The quality management system process is used by contractors to increase efficiency and quality of installations at the same time. FCIA has used third party firestop contractor company management system audits by third party agencies such as FM Approvals and UL/ULC since the inception of the FCIA. These third party entities could be approved by the Authority Having Jurisdiction similar to the Approved Agency used in Special Inspections section of the International Building Code, Chapter 17. The firestop / containment worker apprenticeship education program, recently released, helps build quality and reliability of the

WHEN THE BEST WANT THE BEST!



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



Stantec
UC Davis Medical Center in Sacramento, CA
Interior Walls



Shigeru Ban Architects & CCY Architects
Aspen Art Museum in Aspen, CO
Exterior Curtain Wall / Elevator Enclosure



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With 80+ pages of fire rated glazing applications!

installed systems. Contractor companies and others use the program and its Instructor Edition to build a knowledgeable firestop specific workforce. Focusing on firestopping as a trade means that the systems are understood by management and the workforce, critical items for success.

The Firestop Contractors International Association (FCIA) collaborated with FM Approvals to build FM 4991, Standard for the Approval of Firestop Contractors and with UL developing the UL/ULC

Qualified Firestop Contractor Program. Both the FM 4991 and UL/ULC Qualified Firestop Contractor Programs provide General Contractors and Building Owners and Managers, Fire Marshals and Building Code Officials a way to quantifiably qualify contractor companies. The FM 4991 and UL/ULC Qualified Firestop Contractor Programs are a way to differentiate installing firestop contractor companies from one another. These FM or UL/ULC Contractors have invested in their company's quality management installation process for firestopping.



In UL Firestop System C-AJ-1353, for existing buildings, the surfaces must be cleaned free of dirt, debris, paint. FCIA Photo



In this case, the firestop product is installed above the mineral wool at the top of the sleeve. The tested and listed system sometimes states to install at the plane of the floor. Firestop Contractors pay attention to systems and know to look for this positioning. FCIA Photo



Firestop Containment Workers install backing/damming materials such as mineral wool to the C-AJ-1353 system specified thickness, depth and density. FCIA Photo

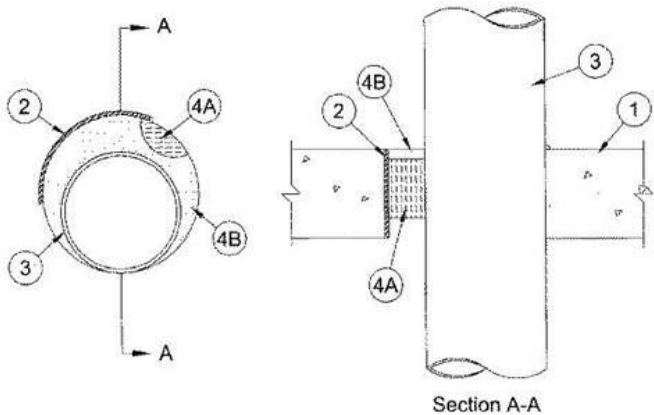


Firestop sealants are all required to be smoothed in the manufacturers installation instructions. The C-AJ-1353 will not mention this detail. That's why both the UL or other system, the manufacturers installation instructions and safety data sheets are needed for correct installation. FCIA Photo

System No. C-AJ-1353

August 18, 2011

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating - 3 Hr	F Rating - 3 Hr
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating - 3 Hr
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating At Ambient - Less Than 1 CFM/sq ft
	L Rating At 400 F - Less Than 1 CFM/sq ft



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permission from UL.

In the system description, the steel sleeve is allowed to extend 2" past the floor or wall surface.

2. Steel Sleeve — (Optional) — Nom 14 in. (356 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe or No. 26 ga (0.022 in. or 0.56 mm thick) sheet steel sleeve with square anchor flange spot welded to the sleeve at approx mid-height. Sleeve cast or grouted in place flush with floor or wall surfaces. Steel pipe sleeve may project a max of 2 in. (51 mm) beyond the floor or wall surfaces.

Then, the firestop products are allowed to be installed in the sleeve, at its ends, as stated in the C-AJ-1353 System. Some systems do not allow installation at the end of the sleeves.

4-B. Fill, Void or Cavity Material* — Sealant — Fill material applied within annulus, flush with top surface of floor assembly or top edge of steel sleeve....
[NOTE: the rest of the paragraph has been deleted]

Contractor Accreditation Programs

What's an Accreditation? What's Certification? Accreditation refers to the company and has an individual knowledge element associated with the program. Certification refers to a process to verify an individual's knowledge of a certain subject. 15 years ago, FCIA chose the accreditation model to build the FM 4991 and UL Qualified Firestop Contractor Programs.

How Do Contractors Get Accredited?

Firestop Contractors become accredited through the FM 4991 Approved or UL/ULC Qualified programs. The programs require a number of steps to get approved or qualified.

Step 1 - Company Quality Management System

First, the company creates a quality management system. This management system outlines the policies and procedures the company uses to get firestop products installed to the tested and listed system. The management system outlines several items. The key elements addressed in management systems include:

- A. **Construction Documents Requirements and Review** - How does the company review projects after they've been successful as the contractor of choice.
- B. **Procurement of Materials** - What do contractors require of their suppliers?
- C. **Storage, Handling, Packaging, Preservation and Delivery** - How does the contractor assure that manufacturers limitations are followed?
- D. **Installation, Application and Field Quality Assurance Procedures** - What does the company do to make sure that the field has survey or inspection of their own work to know their management system is working?
- E. **Inspection, Testing and Calibration** - How does the company calibrate critical equipment? Tape measures are critical tools for contractor workers to have in good working order. How do they control the accuracy of tape measures?
- F. **Control of Nonconforming Product** - There is bound to be material that arrives at the jobsite that's been damaged, out of shelf life, or not correct. How does the company isolate that material so it is not used?
- G. **Training and Qualification of Staff** - What experience and education is required for the workforce, management, and other areas of the company? How is it documented?
- H. **Corrective/Preventive Action** - All companies have issues, make mistakes. How does the management system track errors? How are corrective actions taken to fix the error?

- I. **Management System Monitoring and Improvement** - What measures does the company take to keep the management system working properly? How often does the company review its management system?
- J. **Documentation and Record Keeping** - How does the company document its work? What records are kept and where?

Step 2 – Individual Knowledge Element

The management system for a firestop contractor is extensive. It is a way for the company to look at its procedures for efficiency and quality at the same time.

Second, a person must pass a rigorous FM or UL/ULC firestop industry exam based on FCIA's Firestop Manual of Practice and firestop systems selection-analysis. Once the person passes the exam, they receive a letter from FM or UL/ULC stating they passed the exam. Once the person has passed the firestop exam, and the company becomes FM 4991 Approved or UL/ULC Qualified, the person can be appointed by the company as a 'Designated Responsible Individual', or DRI.

They become a DRI only after the firm becomes FM 4991 Approved or UL/ULC Qualified. Education for those taking the FM or UL Firestop Exam is offered at FCIA Conferences, Symposiums and at some of UL's locations in North America.

Step 3 – Independent, 3rd Party Audit

After the management system has been in place and working, the company schedules an audit of their management system by FM Approvals or UL/ULC. The audit is a full day at the office verifying that the procedures listed above are actually followed and in the company culture. The audit also takes place at a jobsite to verify that the management system on paper actually works in the field.

After a company and on site management system audit takes place, the company receives either a letter stating deficiencies to remedy or is approved or qualified as a FM 4991 Approved Contractor or UL/ULC Qualified Firestop Contractor.

Benefits

What does a specifier, building owner and manager or General Contractor get with an FM 4991 Approved or UL/ULC Qualified Contractor? They get a company that has been evaluated by an independent, world renowned organization...or by both organizations.

I-Inspection

For the second 'I', **Inspection**, the 2012 International Building Code has a requirement for 3rd party, independent, special inspection of firestop installations using ASTM E 2174 and ASTM E 2393 Standards for the Inspection of Installed Penetration (2174) and Fire Resistive Joint (2393) Firestop as the process.

Firestop Special Inspections is required for structures 75' and higher above lowest fire department access and critical occupancies found in IBC's table 1604.5. Buildings such as education, assembly and other occupancies may be subject to these inspections from the 1604.5 reference.

FCIA was the code proponent that petitioned to include ASTM E 2174 & ASTM E 2393 in the International Code Council's 2012 International Building Code Chapter 17, Special Inspections. FCIA collaborated with manufacturers and consultants in the industry to create the ASTM E 2174 & ASTM E 2393 Standards starting at an FCIA Conference in 1999. FCIA also had supporting testimony from the same manufacturers and consultants at ASTM and also ICC. In Canada, there is no inspection requirement at this time.

How does Firestop Inspection Work?

In the International Building Code's Chapter 17, there are two required approvals for special inspection. First, the special inspection agency needs to become recognized by the building code official as an "Approved Agency". Second, the Special Inspector needs to be "Approved" by the building code official.

A Special Inspection Agency can take several different corporate forms. The organization can be a sole proprietor, corporation, (Sub Chapter S, or C-Corp.), a Limited Liability Corporation or other form of company. For the Approved Agency Approval, the building code official can use a number of options to recognize the special inspection agency as referenced in IBC Chapter 17, 1703, Approvals. (Check out the sidebar that covers the approvals needed)

One way to approve the Special Inspection Agency is through a third party Accreditation program. There could be many organizations providing accreditation services that are independent of the manufacturer, contractors, inspection agencies and others.

Currently, International Accreditation Services, (iAS), a subsidiary of the International Code Council, (ICC) has an Accreditation Criteria, AC-291 for Special Inspection Agency Companies. In iAS AC 291, there are requirements for accrediting those inspection companies that specialize in firestop special inspection among many other disciplines subject to "Special Inspection" as referenced in Special Inspection, Chapter 17, Section 1705. FCIA's Standards Committee worked with iAS to build the Firestopping section of iAS AC-291. In addition to passing a management system audit, similar to what the contractor companies are subject to, there is an individual knowledge element to iAS AC 291. Spray fire resistive materials and also intumescent fire resistive materials used for fireproofing are also subject to special inspection and have a section in iAS AC 291 as well.

M-Maintenance

For "**M-Maintenance and Management**", firestopping is included in the fire resistance

rated construction section on Maintenance in the International Fire Code 703.1. NFPA 101, the Life Safety Code and the National Fire Code of Canada also have requirements for maintenance of fire protection features.

In the International Fire Code, the requirement is mandated for annual inspection of several fire protection features by the building owner. Here is the 'Maintenance' passage, with emphasis area bolded for convenience:

SECTION 703

FIRE-RESISTANCE-RATED CONSTRUCTION

703.1 Maintenance. *The required fire-resistance rating of fire-resistance-rated construction (including walls, firestops, shaft enclosures, partitions, smoke barriers, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistant joint systems) shall be maintained. **Such elements shall be visually inspected by the owner annually and properly repaired, restored or replaced when damaged, altered, breached or penetrated.** Where concealed, such elements shall not be required to be visually inspected by the owner unless the concealed space is accessible by the removal or movement of a panel, access door, ceiling tile or similar movable entry to the space. 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. Openings through fire-resistance-rated assemblies shall be protected by self- or automatic-closing doors of approved construction meeting the fire protection requirements for the assembly.*

Excerpted from the 2012 International Fire Code, copyright, the International Code Council.

Firestopping as a System

Throughout North America and Internationally, firestopping is a systems oriented installation. The product alone does not get a rating. Products must be installed to the tested and listed SYSTEM from a nationally recognized testing laboratory (FM Approvals, Intertek, or UL/ULC) before they become a fire and life safety tested and listed Firestop SYSTEM.

It takes a firestop contractor who understands the details involved to get these systems installed right so the firestop system works when called upon by fire. It also takes a firestop specialty contractor to understand how to supervise the workforce with a "Systems Orientation" so the workers don't 'get creative' in the field and vary from the tested and listed systems. Most important, if the company does not understand the tested and listed systems protocol, then they could supervise the workers into substandard installations. A special inspection agency that understands the limitations of and focuses on firestopping is needed to know if a tested and listed system is installed properly in addition to a good firestop contractor.

Once the tested and listed firestop system is installed and building turned over to the building owner and/or manager, the tested and listed systems can be managed or maintained for the life of the building.

Sounds easy? Try it in real life! That's why the firestop contractor can be a great service to the building owner and manager. After the building is constructed, new pipe and cables are placed to serve building occupants, in some cases daily. These make holes in the walls and floors that need to be treated to keep the continuity in place for fire and smoke resistance.

Specialty firestop contractors understand how to maintain continuity of fire resistance. They also know what needs to be done to keep the rest of the fire resistance and smoke resistant system effective including fire rated doors and dampers in addition to restoring the continuity to the wall itself. Rely on the specialty firestop contractor. They understand more than just firestop systems.

How Did These Programs Get Built?

The Firestop Contractors International Association has been involved in the development of better reliability of firestopping installations by building:

- Body of Knowledge – the FCIA Firestop Manual of Practice is the study guide for FM & UL/ULC Firestop Exams for Contractor and Special Inspection Personnel to prove their expertise to the Authority Having Jurisdiction, the Building Code Official. It's also where the firestop industry knowledge rests. (www.fcia.org, click on FM 4991 Approval or UL Qualification)
- Build the reliability of Firestopping – FCIA's Accreditation Committee worked with FM Approvals, UL/ULC, it's Standards Committee at ASTM, iAS and at the Code Committee at ICC and NFPA to build and implement the DIIM for firestopping. want to make a difference? Join the association and get involved. (www.fcia.org)
- Educate – at FCIA Conferences, meet industry leaders in firestopping and effective compartmentation and take the classes needed for the FM 4991 Approved, UL/ULC Qualified Firestop Contractor Programs and iAS's AC 291, Accreditation Criteria for Special Inspection Agencies. (<http://fcia.org/IASAccreditation.php>).

FCIA has been at the forefront of building reliability of the installed systems through the quality management system process. Watch www.FCIA.org for further actions as we work to continuously improve these programs with the result sought as safe buildings for all. 🔥

Bill McHugh is Executive Director of the Firestop Contractors International Association (FCIA). Bill can be reached at bill@fcia.org.



Sidebar: What does the The International Code Council's International Building Code say about Special Inspections, Approved Agencies and Special Inspectors.

Chapter 17 of the International Building Code (IBC) is about special inspections. Special Inspections are used for areas that are critical to life safety in buildings. Required inspections include Firestopping, Spray Fire Resistant and Intumescent Fireproofing (SFRM and IFRM), Welding, Fabricators, and much more. See IBC's Section 1705 for a complete list of special inspection items.

Regardless of the industry, it is critical to have special inspection agencies who 'meet applicable requirements'. That means the agencies need to understand the industries enough to find deviations from specified requirements.

Here is the definition from the IBC for Approved Agency, or the special inspection agency:

[A] APPROVED AGENCY. An established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved. [IBC 202. Definitions]

The Approved Agency is the first approval required by the building official or AHJ prior to start of the inspection work. We know what the special inspection agency is, but what does "Approved" mean? Yes, there is a definition for approved in the International Building Code's Chapter 2.

[A] APPROVED. Acceptable to the building official or authority having jurisdiction. [IBC 202 Definitions]

There is also a definition for Special Inspector in the same section of the IBC. Note that there are separate definitions for the approved agency (company of some form) and the special inspector.

SPECIAL INSPECTOR. A qualified person employed or retained by an approved agency and approved by the building official as having the competence necessary to inspect a particular type of construction requiring special inspection. [IBC 202. Definitions]

There is a question asked during FCIA's Webinars. Can the special inspector and the special inspection agency be the same? If the special inspector is a sole proprietor, the answer is yes. There still needs

to be two approvals by the building official or AHJ, the approval as the approved agency first, then the approved special inspector. Why? The section 1703 shows why.

**SECTION 1703
APPROVALS**

1703.1 Approved agency. An approved agency shall provide all information as necessary for the *building official* to determine that the agency meets the applicable requirements specified in Sections 1703.1.1 through 1703.1.3 **[IBC 1703.1].**

Once the agency is approved, an "Independence Statement" is sought

1703.1.1 Independence. An *approved agency* shall be objective, competent and independent from the contractor responsible for the work being inspected. The agency shall also disclose to the *building official* and the *registered design professional in responsible charge* possible conflicts of interest so that objectivity can be confirmed. **[IBC 1703.1.1]**

1703.1.2 Equipment. An *approved agency* shall have adequate equipment to perform required tests. The equipment shall be periodically calibrated. **[IBC 1703.1.2]**

The section 1703.1.3 is critical to success of the special inspection on a particular project.

1703.1.3 Personnel. An *approved agency* shall employ experienced personnel educated in conducting, supervising and evaluating tests and *special inspections*. **[IBC 1703.1.1]**

Then, in 1704.2.1, the IBC further delves into the special inspector qualifications. Note that the qualifications are to come through the "approved agency" to the building official demonstrating competence and relevant experience or training of special inspectors. The passage then also further states the special relevant experience needs to be related:

1704.2.1 Special inspector qualifications. Prior to the start of the construction, the *approved agencies* shall provide written documentation to the *building official* demonstrating the competence and relevant experience or training of the *special inspectors* who

will perform the *special inspections* and tests during construction. Experience or training shall be considered relevant where the documented experience or training is related in complexity to the same type of *special inspection* or testing activities for projects of similar complexity and material qualities. These qualifications are in addition to qualifications specified in other sections of this code.

The *registered design professional in responsible charge* and engineers of record involved in the design of the project are permitted to act as the *approved agency* and their personnel are permitted to act as special inspectors for the work designed by them, provided they qualify as special inspectors. **[IBC 1704.2.4]**

In the first paragraph, the special inspection agency submits to the building code official the qualifications of the special inspectors. In reviewing the last sentence of 1704.2.1, it seems to point to both an approved agency and *their personnel* as being approved. This is not one or the other, it's both.

In Section

1704.2.4 Report requirement. *Approved agencies* shall keep records of special inspections and tests. The *approved agency* shall submit reports of *special inspections* and tests to the *building official* and to the *registered design professional in responsible charge*. Reports shall indicate that work

inspected or tested was or was not completed in conformance to *approved construction documents*. **Discrepancies shall be brought to the immediate attention of the contractor for correction.** If they are not corrected, the discrepancies shall be brought to the attention of the *building official* and to the *registered design professional in responsible charge* prior to the completion of that phase of the work. A final report documenting required *special inspections* and tests, and correction of any discrepancies noted in the inspections or tests, shall be submitted at a point in time agreed upon prior to the start of work by the owner or the owner's authorized agent to the *building official*. **[IBC 1704.2.4 -Bold, author emphasis].**

In the reporting section of the IBC 1704.2.4, there is a very clear requirement for immediate notification to the contractor for correction. That immediate statement puts the special inspector in the position of knowing who to contact immediately. The next question that might come up is how to define immediate. With text messaging and email, notification can take place immediately.


However, the proper communication channels need to be established for this to work. In a sub contractor, contractor relationship, is the notice to the general contractor copying the subcontractor? Subcontractor copy to the general contractor? That needs to be established early.

continued from page 8

A burnt roll of bathroom tissue here, a singed poster there, are often precursors to a larger event yet to happen. Let us be ever vigilant for the telltale signs of an unstable individual looking for an even bigger thrill. In the aftermath of the most recent incendiary fires I have been involved with, interviews of other building occupants, especially cleaners and maintenance staff, have yielded just such a pattern of small fires leading up the big event. These events were reported to the campus police with no follow-up on their part. Our police and public safety officers need arson awareness training as do all staff members regularly assigned to our buildings.

And last, but not least, a pet peeve of mine: unsecured portions of buildings that are unoccupied along with unsecured areas in buildings that most occupants have no legitimate reason for entering. While arson is not usually labeled a crime of opportunity in the same way as larceny, I believe that we should reduce the opportunities available to

a would-be arsonist. Why provide ready targets off the beat and path? Why put temptation before those lacking in rational thought and self-control?

Bottom line: Expect the unexpected. Be prepared. These are the lessons of December 7th. 

Philip Chandler is a long time firefighter and a fulltime government fire marshal working extensively in the college environment – from large public university centers to small private colleges. His primary responsibilities include code enforcement and education. Phil may be reached at: theinspector@campusfiresafety.org. Article reprinted from The Center for Campus Fire Safety. www.campusfiresafety.org.

Note: The viewpoints expressed in The Inspector are those of the author alone. They are offered to initiate thought and debate, however, they do not necessarily represent the views or opinions of The Center for Campus Fire Safety, Life Safety Digest, its officers, directors or its editorial staff.

Industry News



INFORM. ENGAGE. INSPIRE.

ECA 2015 – Inform. Engage. Inspire.

FCIA's ECA Registration Open – The Program Committee has worked hard to put together an Agenda chock full of

enlightening education sessions, FCIA Education for the FM & UL Firestop Exams, action-education oriented committee sessions and lively networking events.

Enhance your knowledge of this important life safety service – firestopping & effective compartmentation. Be active in your Association. Take in the sights of Downtown Dallas while staying in a historic hotel that brings back memories of an age of opulence and elegance. Registration for the Education and Committee Action Conference (ECA 2015) is now open. Join FCIA May 5-8, 2015 as we travel to Dallas, TX and The Adolphus Hotel for ECA 2015

Barrier Management Symposium Coming to Rochester, MN – Registration is NOW OPEN for the FCIA, American Society of Healthcare Engineering (ASHE), UL and The Joint Commission's Barrier Management Symposium being held April 14-15, 2015 at The Kahler Hotel in Rochester, MN.

FCIA and ASHE Region 6 have put together a stellar lineup for the BMS Program – a two-day education program focusing on:

- Deficiencies commonly found by The Joint Commission facility accreditation surveys;
- Code requirements for Barriers
- Testing for all types of Fire Resistance and Firestopping;
- Management strategies for maintenance of the installed features of fire resistance...Fire & Smoke Barriers, Fire Doors, Fire Rated Glazing, Fire and Smoke Dampers, Firestopping, And more.

Past Barrier Management Symposium Programs have been so well received that the BMS series is in high demand among ASHE Regions and Chapters across the United States.

Look for additional programs in 2015 in Region 7, Region 5, Region 1 and Region 3. Dates and locations to be released at a later date.

*Note: There is a \$50 registration fee for this event in Rochester, MN.

Register Today!

March 25 FCIA Webinar – Tune in for the March episode in the 2015 FCIA Educational Webinar Series, “An In-Depth Look at the FM 4991 Standard for the Approval of Firestop Contractors and the UL/ULC Qualified Contractor Programs”, March 25, 2015 10:00am-11:00am CST.

Firestop products become SYSTEMS when installed

by a Firestop Contractor to the tested and listed system requirements and manufacturer instructions. But what IS a Qualified/Approved Firestop Contractor, and who—or what – determines their status?

We will take an in-depth look at both third-party accreditation programs for Firestop Contractors: the FM 4991 Approval for Firestop Contractors and the UL/ULC Qualified Contractor Program, and their specific and respective program requirements. We will also take a look at the benefits of these programs and how they affect both the Contractor and the client...plus a short look at IAS AC 291. Register online at www.FCIA.org.

March UL Firestop Exam – Firestop Contractors, Special Inspectors with Special Inspection Agencies performing Firestop Inspections – Are you looking to set yourself apart from the competition? Have you considered becoming a UL/ULC Qualified Contractor or IAS AC 291 Accredited? Already a UL/ULC Qualified Contractor, but need to write the UL/ULC or FM Firestop Exam?

The next UL/ULC Firestop Exam date is coming up quickly! Join FCIA and UL in Melville, NY, March 24, 2015 for the FCIA Exam Prep session, Quality Management System Seminar and the UL/ULC Firestop Exam. The education session is FREE for FCIA Members, and goes a long way towards helping prepare you for the UL/ULC Firestop Exam.

Education begins at 8am the morning of the exam, with the exam following at 1pm. Discounted hotel rates are available. Looking for the FM Firestop Exam? Don't miss the FCIA ECA Conference. Visit www.fcia.org for more info.

Interested in learning more? Contact lindsey@fcia.org for details and registration.



Inpro Acquires Fireline 520™ – Inpro, a Milwaukee, WI firm, has acquired Buffalo, N.Y.-based Fireline 520 LLC, one of the nation's designers and manufacturers of fire barriers for expansion joints. Fireline 520 will become a wholly owned subsidiary of Inpro, and as such will maintain its staff and production operations in Buffalo. Since 1979, Inpro has been making and servicing products with an obsessive commitment to protecting the appearance of buildings and the health and safety of the people who use them. Based in Muskego, Wisconsin, Inpro is a global manufacturer of door and wall protection, washroom systems, expansion joint systems, privacy systems and architectural signage.

FCIA Represented at GCC Fire Safe

Congress in Abu Dhabi – Fire Safety in the Oil & Gas, Petroleum and Petro Chemicals industries has always been a concern. Because large amounts of flammable gases and liquids are handled regularly and are routinely stored, and because of the chemical reactions involved in the manufacturing processes, petrochemical plants are believed to be continuously exposed to the risk of fires and explosion accidents.

The GCC Fire Safe Congress is one of the most asked for Conferences in the region. Gathering together March 30-31, 2015 at the Park Hyatt, Abu Dhabi, key decision-makers will gather to learn about the newest technologies, practices and more.

FCIA is presenting on the “DIIM” of Firestopping to the group. This goes a long way towards spreading the message of the “DIIM” of Firestopping around the world to gain widespread acceptance of Firestopping as a Specialty Trade and increased awareness for improved fire and life safety.

FCIA Members who wish to attend the GCC Fire Safe Congress receive a 50% discount on their registration. Email lindsey@fcia.org for a link to register.

IFMA Facility Fusion Opens New Venue– Vancouver! IFMA Facility Fusion, the dynamic educational event focused on gathering the brightest minds to develop innovative solutions for the multifaceted challenges of Facility Management, has expanded its footprint to include two venues: Orlando, FL and Vancouver, BC!

Facility Fusion Canada is a unique opportunity to gain valuable facility-related educational content that is specific to Canada. The small setting is perfect for networking and developing key business relationships for every Facility Management need. Make your way to the Sheraton Wall Centre, March 10-11, ready to provide solutions and ideas for Facility Management professionals from all over Canada.

Facility Fusion Orlando is a powerful opportunity to engage in high-level education, dynamic networking and best practices brainstorming, advanced sustainability strategies and innovative product solutions. April 21-23 meet and engage professionals from all over the United States at the Rosen Shingle Creek.

Be sure to grab the latest issue of *Life Safety Digest* while you're there. The publication will be present on the Expo floor at both Conferences!

CdpACCESS Changing Code Development – The International Code Council (ICC) has changed the way code officials vote on the content of future codes. With the introduction of cdpACCESS, code officials from around the country are able to vote on code proposals from their office (or their kitchen table).

Code proposals have long been voted on during the code hearings held twice yearly. This means that their content has been decided by the select few who are able to travel to the hearings. With the cdpACCESS program, tens of thousands of code officials can come

together to participate in the process.

FCIA's Code Committee, along with Koffel & Associates, is always present at the code hearings, making our case for and defending our position on code changes that affect our industry. Check out what we're doing in the Code Corner Section, in this issue.

FCIA Education Courses Approved for Continuing Education Credits – The 2015 FCIA Educational Webinar Series has been approved for American Institute of Architects (AIA) Continuing Education Credits. Any webinar attendees who are members of AIA or who require AIA CEU credits are now able to submit their attendance on the webinar for credit. This is a great step for FCIA because it:

- Provides greater credibility for the Educational Webinar Series;
- Opens the program to a wider interest base by having the course registered on the AIA CES Discovery program list;
- Provides third-party confirmation that the content in the program is essential.

FCIA is not only focused on providing key training and education courses, but is also focused on ***providing them to the right people*** to generate support and to spread the message of the “DIIM” of Firestopping and Effective Compartmentation around the world.

ICC Announces 2015 Building Safety Month theme – “Resilient Communities Start with Building Codes.” May marks the 35th year of the event that raises the profile of building safety professionals. In just a few months, jurisdictions will mark the 35th annual celebration of Building Safety Month. Building safety professionals will host community events to demonstrate the correct way to build to code, or the importance of building permits and inspections, or similar themes that demonstrate the benefits of code compliance.

“Over the years, the Code Council has been thrilled with the support and public visibility that has been given to building safety and building safety professionals by community events hosted by ICC Member jurisdictions, support from ICC Chapters and recognition by presidential, gubernatorial and municipal proclamations,” said ICC Board President Guy Tomberlin, CBO.

Weekly Building Safety Month themes support the overall message: “Resilient Communities Start with Building Codes.”

May 4-10, “Don’t Get Burned–Build to Code,” focuses on protecting homes and buildings with essential safety measures.

“Bounce Back Faster from Disaster–Build to Code” is the theme for May 11-17, raising awareness to prepare for natural disasters.

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May 18-24, is “Water Safe, Water Smart–Build to Code” week, focusing on pool safety and how plumbing codes reduce water usage and ensure safe drinking water.

“Save Energy–Build to Code” is the area of focus during May 25-31, spotlighting advancements in sustainable design and energy conservation.

A host of support materials are available at www.buildingsafetymonth.org.



Dominic Sims

ICC CEO Sims Named to ANSI National Policy Committee – International Code Council Chief Executive Officer Dominic Sims, CBO, has been appointed by the American National Standards Institute (ANSI) Executive Committee as a member of the institute’s National Policy Committee.

The committee is responsible for broad-based policy and position decisions regarding national standards development process issues, government relations and public policy issues. “It is an honor to serve as a member of this committee and represent the interests of building safety professionals in creating standards development policy,” Sims said. “ICC develops several American National Standards in accordance with ANSI’s Essential Requirements and has a great deal of respect for the work of the Policy Committee. More than 1,500 standards are referenced in our International Codes that act as a critical means for those standards to have a real impact on commerce.”

Standards Council of Canada & ICC ES – The Standards Council of Canada (SCC) now recognizes ICC Evaluation Service (ICC-ES) building product listings, a new service supporting manufacturers who distribute products in Canada and the U.S. The recognition allows ICC-ES to certify many building products for the Canadian market. Some of the products ICC-ES can now list to Canadian requirements include iron and steel products, elements and structures of buildings. The acceptance of ICC-ES provides easier access to the Canadian markets by eliminating a hurdle, allowing ICC-ES to be a sole source provider of code compliance recognition in the U.S. and Canada. For FCIA Manufacturer Members, this helps reduce duplicate evaluations, saving costs for truly North American Marketing.

NFCA Conference – The National Fireproofing Contractors Association Annual Conference & Education Session takes place in Chandler, AZ the week of March 9-13. Education sessions focus on better fire resistance for structural steel and educating the industry about how systems are installed and inspected, code requirements, standards and more.

Check out www.NFCA-online.org for info.

AMCA Commissioning Guide – The Air Movement and Control Association developed and published the “Guide for Commissioning and Periodic Performance Testing of Fire, Smoke and Other Life Safety Related Dampers. This 6 page free document gives bullet points for commissioning these dampers. Visit <http://www.amca.org/advocacy/constructioncodes.php> for more info.

New Gypsum Association Executive Director– Stephen H. Meima has been named Executive Director of the Gypsum Association (GA). In this position, he leads the organization’s day-to-day operations, oversees its significant contributions to model building codes and standards, and ensures that Association member companies and their customers receive vital services including technical information on the proper selection and installation of gypsum panel products. The Gypsum Association represents all active gypsum board (panel) manufacturers in the United States and Canada. Stephen served at the Gypsum Association from 1996-1999. Previously, he was with a gypsum manufacturer and the Design Build Institute of America.



Jim Toscas

New Portland Cement Association CEO – The Board of Directors of the Portland Cement Association has named James G. Toscas president and chief executive officer. “Toscas has decades of experience in the concrete industry. For the past 11 years, he served as president and CEO of the Precast/Prestressed Concrete Institute, and from 1998 to 2002, he was executive vice president and CEO at the American Concrete

Institute. As a founder of the Concrete and Masonry-Related Associations, Toscas improved the collaboration of all industry allies and provided a forum for the establishment of a strategic roadmap for the entire concrete industry.”, stated PCA’s Press Release.

HILTI HQ Moving – FCIA Manufacturer Member Hilti North America is relocating its Tulsa, OK-based North America Corporate Headquarters, Test Lab, and Repair Service and Distribution Centers to the Dallas-Fort Worth, TX metroplex. The current Tulsa facility will transition to the organization’s Operations Center in June 2015 when the move is complete.

DHI offers Webinars – The Door and Hardware Institute has been offering webinars to promote fire and life safety through fire rated door and builders hardware assemblies. Visit www.DHI.org for info and schedule.

Code Corner

FCIA & ICC's 2018 Code Development

Process – The International Code Council's family of codes including the International Building Code (IBC), International Fire Code (IFC) and other codes are updated every three years after thorough development process.

ICC recently launched its "CDPAccess", a code development process that looks at making code development easier for all parties involved including the building official and participating industries. The code development proposals are submitted using a modified process that streamlines the communication process. Collaboration can take place during the code proposal development phase. Most important, remote voting by governmental members at ICC is allowed providing participation from those who cannot travel to the code development hearings.

ICC's Code Hearings – Don't miss the Code Development Hearings in Memphis, TN, April 17-30. Yes, that's two weeks of code development hearings to debate and decide the fate of about 2,000 proposals. Each proposal is given equal opportunity to be heard by a balanced committee of governmental and industry members. Industry ICC members include contractors, manufacturers, building owners and managers, architects and home builders. Hearings are "webcast". Simply visit www.ICCSAFE.org to stream the hearings live.

FCIA Submits Proposals – FCIA's Code Committee, through Code Consultant Bill Koffel, Koffel Associates, has submitted seven proposals for consideration by the code development committee.

The first proposal is in 1023.5, Stairways and, where a security system is used in a stairway, refers back to section 714 for penetration protection.

1023.5 Penetrations.

Penetrations into or through interior exit stairways and ramps are prohibited except for equipment and ductwork necessary for independent ventilation or pressurization, sprinkler piping, standpipes, electrical raceway for fire department communication and security systems and electrical raceway serving the interior exit stairway and ramp and terminating at a steel box not exceeding 16 square inches (0.010 m²). Such penetrations shall be protected in accordance with Section 714. There shall not be penetrations or communication openings, whether protected or not, between adjacent interior exit stairways and ramps.

Exception: Membrane penetrations shall be permitted on the outside of the interior exit stairway and ramp. Such penetrations shall be protected in accordance with Section 714.3.2.

Reason: Building security systems, including cameras in stairways, are becoming more prevalent. If properly protected, a limited number of penetrations

for security systems will not result in an unacceptable level of safety. NFPA 101-2015 requires stairway video monitoring in high-rise buildings having an occupant load of 4,000 or more persons.

The second proposal is a continuation of the concept that approved or qualified contractors by an approved agency certified by an organization accredited to the criteria set forth in ISO 17024 shall be used. There is an exception for Level 1, 2 alterations as well.

714.2 Contractor Qualifications

In buildings of Group I-2 occupancy, listed through-penetration firestop systems shall be installed by contractors certified by an organization accredited to the criteria set forth ISO 17024.

Documentation shall be submitted to the code official verifying certification of the contractor.

Exception: Repairs, Level 1 Alterations, and Level 2 Alterations as defined in the International Existing Building Code.

Reason: The proposed language addresses the issues and concerns expressed in the past by the Code Development Committee

1. Availability of contractors - The application of the section has been restricted to buildings of Group I-2. Such construction projects, especially Level 3 Alterations and new construction generally attract regional general contractors and therefore firestop contractors will also be attracted from a regional basis. Presently there are contractors in every state. It is also anticipated that additional contractors will seek the necessary qualification between the time when the proposal is approved and the code is adopted and enforced.
2. References to specific qualification programs - The proposed language eliminates the references to the existing UL and FM programs and instead uses the phrase "approved agency" as defined in Chapter 17 of the Code.
3. Small projects - By exempting Repairs, Level 1 Alterations, and Level 2 Alterations, smaller construction projects will not required outside specialty contractors. Proper design, selection, installation, and inspection of through penetration firestop systems are critical to maintaining the integrity of the fire resistance rated assembly that is being penetrated. There are existing approval or qualification programs administered by FM Approvals and UL for contractors who install materials that become firestop systems. Contracting firms are eligible to obtain the FM Approval and/or UL Qualification. The costs range from \$6,000 to \$10,000 for the initial audit and about \$3,000 annually for ongoing audits. Currently, companies of all sizes are FM 4991 Approved or UL Qualified in areas where the I-Codes are adopted.

Also in 714.2, a new section on “Installation” has been submitted that focuses on the manufacturers installation instructions. FCIA submitted a similar proposal to 715 as well:

714.2 Installation

A listed through-penetration firestop system shall be securely installed in accordance with the manufacturer’s installation instructions and the listing criteria.

Reason: The intent of the paragraph is to require that all listed systems be installed in accordance with the listing criteria (including manufacturer’s instructions). The manufacturer’s instructions provide additional details that are not commonly identified in the listing criteria, including environmental conditions and tooling.

715.2 Installation.

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

In another proposal, a clarification of an exception in 714.4.1 is also submitted for approval by the ICC’s Code Committee.

714.4.1 Through penetrations.

Through penetrations of horizontal assemblies shall comply with Section 714.4.1.1 or 714.4.1.2.

Exceptions:

1. Penetrations by steel, ferrous or copper conduits, pipes, tubes or vents or concrete or masonry items through a single fire-resistance-rated floor assembly where the annular space is protected with materials that prevent the passage of flame and hot gases sufficient to ignite cotton waste when subjected to ASTM E 119 or UL 263 time temperature fire conditions under a minimum positive pressure differential of 0.01 inch (2.49 Pa) of water at the location of the penetration for the time period equivalent to the fire-resistance rating of the construction penetrated. Penetrating items with a maximum 6-inch (152 mm) nominal diameter shall not be limited to the penetration of a single fire-resistance-rated floor assembly, provided the aggregate area of the openings through the assembly does not exceed 144 square inches (92 900 mm²) in any 100 square feet (9.3 m²) of floor area. Such penetrations shall be contained and located within the concealed space of a horizontal assembly or within the cavity of a wall above or below the floor.
2. Penetrations in a single concrete floor by steel, ferrous or copper conduits, pipes, tubes or vents with a maximum 6-inch (152 mm) nominal diameter, provided the concrete, grout or mortar is installed the full thickness of the floor or the thickness required to maintain the fire-resistance rating. The penetrating items shall not be limited to

the penetration of a single concrete floor, provided the area of the opening through each floor does not exceed 144 square inches (92 900 mm²). Such penetrations shall be contained and located within the concealed space of a horizontal assembly or within the cavity of a wall above or below the floor.

3. Penetrations by listed electrical boxes of any material, provided such boxes have been tested for use in fire-resistance-rated assemblies and installed in accordance with the instructions included in the listing.

Reason: The purpose for this change is not to eliminate the exceptions from the Code but to provide the necessary protection from thermal conductivity as required for other protection methods. There are several areas within the Code that address a concern with regard to the potential for fire spread due to thermal conductivity. The proposed language will result in the exceptions being consistent with the overall intent of the Code by addressing thermal conductivity.

In section 703.7, FCIA submitted a proposal similar to the language that already exists in 703 for marking the barriers.

703.7.1 Penetrations and Joints Tested through penetration firestop systems and fire resistant joint systems in walls requiring marking by Section 703.7 shall be permanently identified with a marking system. The marking system shall be located within 2 inches (50 mm) of the through penetration firestop system. For fire-resistant joint systems, the marking system shall be located within 15 feet (4570 mm) of the end of each wall or floor and at intervals not exceeding 30 feet (9144 mm) measured horizontally along the wall or partition.

The marking system shall be legible and contain, at a minimum, the following information: Do Not Disturb - Firestop System or Fire-Resistant Joint System as appropriate

System Design Number:

Engineering Judgment Number:

Exception: Where an electronic marking and identification system is used, the identifier shall be legible to the reader equipment.

Reason: The purpose for the proposal is to require that firestop systems and joint systems be marked or identified so that code officials, special inspectors, building managers, contractors, and others can understand what system was used. This will reduce the need for expensive research time by special inspectors and code officials to find the appropriate system diagram that is needed to verify that the system used is appropriate for the application.

Secondly, should a repair be needed, knowing the system design number may allow the repair to occur without removing and replacing the entire system. The manufacturer, materials used, and all other pertinent system details will be available to those that need to inspect, maintain, or repair such systems.



AIA Convention 2015: May 14–16, Atlanta

Registration opens January 2015. Visit aia.org/convention

FCIA ADDS: The purpose of this important proposal is to bring consistency to the features of fire resistance. Fire Dampers are shipped with labels already attached to the unit. Fire rated doors have a sticker or metal tag on the door from the factory. Fire rated glazing is marked on each pane of glass with the ratings. Fire and smoke resistance rated barriers are also marked. Each of these is marked. The final piece of the barrier to be marked is the Firestop System.

There are tons of benefits to marking the firestop systems with an identification system of some kind. Penetrations are installed, inspected during the construction process. They are then moved, replaced, surveyed for Fire Code maintenance, then maintained and managed by the building owner and manager throughout the life cycle of the building.

The critical piece of knowledge needed by all who participate in this process is the design number from the FM Approvals Guide, Intertek Directory or UL/ULC Fire Resistance Directory. The firestop is installed to this design, special inspectors working for approved agencies inspect the work based on the system design, installers working for firestop contractors review their own work based on the system design, building and fire code officials verify compliance based on the system design. The building owner and manager can identify who the manufacturer was for the system for maintenance instructions, product notifications and more. Without the tested and listed system number from one of those directories, time is wasted and nobody knows if there is a tested and listed system or not installed.

Based on this, the proposal seeks to provide increased reliability of the fire resistance rated

assemblies through simple marking of the assemblies. Raising awareness results in better performing assemblies.

NFPA Board of Directors Appoints Two New Members to Standards Council - The National Fire Protection Association (NFPA) Board of Directors has appointed two new members to the NFPA Standards Council: Patricia A. Gleason of Mclean, Va., and Gary S. Keith of Norwood, Mass. Gleason and Keith are serving three-year terms effective Jan. 1, 2015.

NFPA also announced the reappointment for a second three-year term of two current Council members, Randall Bradley of Stanislaus Consolidated Fire Protection District, and John Rickard of P3 Consulting, effective Jan. 1, 2015. In addition, the Board has appointed Chad Beebe of ASHE – AHA, who had previously served on an interim basis, to his first official three-year term, also beginning Jan. 1.

The NFPA Standards Council, a 13-member body appointed by the Board of Directors of NFPA, is charged with overseeing the NFPA codes- and standards-making process. Generally, the duties of the Council include supervising activities related to NFPA codes and standards development, acting as administrator of rules and regulations, and serving as an appeals body. Friends of FCIA on the Council include the Univ. of MD's Jim Milke, FM Global's JC Harrington and Chad Beebe from ASHE.

NFPA 101: Life Safety Code Opening for Input for the 2018 Edition – Code proposals for the NFPA Fire Protection Features Committee are due in mid July. FCIA will submit several proposals aimed at building the reliability of installed firestop systems. 🔥

Life Safety Digest

2015 Industry Calendar

March 30 to 31

GCC Fire Safe Congress
Abu Dhabi, UAE
<http://www.gccfiresafecongress.com>

April 21 to 23

IFMA Facility Fusion 2015
Orlando
<http://facilityfusion.ifma.org/orlando/home>

April 14 to 15

Barrier Management
Symposium
Rochester, MN
www.fcia.org

April 17 to 30

Group A Committee
Action Hearings
Memphis, TN
www.iccsafe.org

May 7 to 9

CSI Bi-Region Conference
Hosted by CSI Chicago &
Northern Illinois Chapters
Holiday Inn Mart Plaza
Chicago
<http://chicago.csinet.org/>

May 5 to 8

FCIA Education and
Committee Action
Conference
Adolphus Hotel, Dallas
www.fcia.org

May 14 to 17

AIA Convention
Atlanta
<http://www.aia.org/>

May 27 to 31

Construction Specifications
Canada Conference
Winnipeg, MB Canada
www.csc-dcc.ca

June 3 to 6

Royal Architects Institute
of Canada
Festival of Architecture
Calgary, AB Canada
http://festival.raic.org/index_e.htm

June 22 to 25, 2015

NFPA Expo and Annual
Conference
McCormick Place
Chicago
www.nfpa.org

July 12 to 15

American Society for
Healthcare Engineering
Boston, MA
www.ashe.org

ICC Expo

Long Beach, CA
www.iccsafe.org

Sept. 30 to Oct. 3

CONSTRUCT/CSI Show
St. Louis
www.CONSTRUCTSHOW.com

Nov. 3 to 6

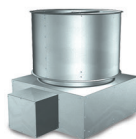
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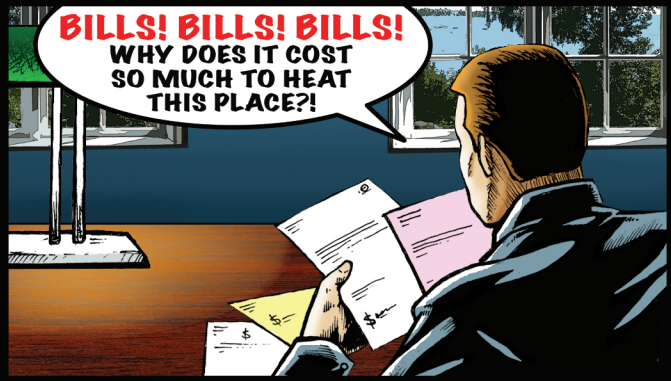
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