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The Magazine of Effective Compartmentation



Life Safety DIGEST

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Editor's Message

Healthcare Occupancies are some of the most regulated in the industry, and for good reason. Occupants are oftentimes not mobile, and in the event of a catastrophe, passive fire and smoke protection takes center stage.

Industry leading events like the Barrier Management Symposium along with conferences and trade shows like the annual American Society of Healthcare Engineers (ASHE) Conference are on the cutting edge of promoting better fire safety standards and SYSTEMS to help further prevent tragedy in these occupancies.

The main function to keep lives safe comes down to how fire and smoke barriers become SYSTEMS that, when installed properly, work together to maintain the structural integrity of a building in the event of a fire.

In this issue of *Life Safety Digest*, you will see articles pertaining to the DIIM of Effective Compartmentation in healthcare occupancies. You'll hear about how these walls and floors become barrier SYSTEMS from The Joint Commission, Koffel Associates, Underwriters Laboratories, FCIA, Technical Glass Products, the Door Security and Safety Foundation.

Through the collaboration taking place at organizations like ASTM, NFPA, UL, FM, and the

many Standards Development Organizations out there, SYSTEMS can be properly tested to meet regulations. The SYSTEMS provide comprehensive documentation to be replicated and maintained by educated organizations.

The philosophy of DIIM for firestopping and Effective Compartmentation (proper Design, Installation, Inspection, and Maintenance/ Management) can lead to more reliable passive fire protection SYSTEMS. Through DIIM'd Fire Resistance Rated and Smoke Resistant SYSTEMS, less lives are lost and more property protected.

Enjoy this issue of *Life Safety Digest*, and thank you for reading. 🔥

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OSHA Takes a Stand on Texting While Driving

By Gary Auman

Editors Note: Safety is important for many of the industries that serve the healthcare organizations. Architect, contractor, building code official, special inspection agency, fire marshal all must travel to jobsites to do their jobs. This article is for all.

I have spent quite a bit of time over the past several months talking about heat stress and the General Duty Clause. What does that have to do with texting while driving – four words – The General Duty Clause. Most employers get so caught up in worrying about compliance with specific safety standards that they sometimes lose sight of the fact that they are responsible for providing their employees a place of employment free of all hazards. Yes, I know the General Duty Clause say “recognized” hazards; but let’s be realistic. If there is an obvious hazard in the workplace to which your employees are exposed, you are going to have a hard time convincing OSHA that you did not consider it a hazard. This is especially true in the case of something that has been in the forefront of the news as much as texting while driving.

OSHA has stated that it will consider an employer to be exposing its employees to a recognized hazard concerning texting while driving if the employer:

1. Requires workers to text while driving,
2. Creates incentives that encourage or condone texting while driving and/or
3. Structures the work so that texting while driving is a practical necessity.

Right now you are saying to yourself, I am fine because I don’t do any one of those three things. You might be right, but are you? How much do you know about how your managers incentivize those who work for them to work above their potential with positive or negative incentives? Perhaps not every day, but are there any days when the only way to get all the work done is to communicate while traveling? Unless you are absolutely sure that you can answer these questions correctively you are at risk. Even if you feel that you can, what would your employees say to an OSHA compliance officer during a confidential interview?

OSHA expects you to have distracted driving policy as part of your safety program and to train you employees with regards to distracted driving. Your distracted driving program should have five components:

1. You should prohibit texting while driving.
2. You should establish work procedures and rules that do not make it necessary for workers to text while driving in order to carry out their duties.
3. You should set up CLEAR procedures, times and places for drivers’ safe use of texting and other technologies for communicating with managers, customers, and others.
4. You should incorporate sage communications practices into worker orientation and training.

5. You should eliminate financial and other incentive systems that encourage workers to text while driving.

OSHA has announced that it is prepared to act quickly when it receives a credible complaint that employees are required to text while driving, either directly or indirectly. If the OSHA investigation bears out the complaint a citation will be issued, and I would expect that such a citation would be serious. In addition I fully expect compliance officers to review contractor safety programs to determine if the program contains material and training on distracted driving. The absence of such material may well result in serious citations.

This should not be too difficult a program to institute. But, be sure you do more than add a page or two to your safety program. Be sure to do the training and also be sure that you enforce the rules you establish. Finally, this program should not stop a texting while driving. Your program on “Distracted Driving” should cover anything else an employee might feel inclined to do while they are behind the wheel on company business. 🔥

Gary Auman, an attorney at Mahan, Dunlevy, Furry, represents many industry associations, specializes in safety and legal issues. Gary can be reached at gwa@dmfdayton.com

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Barrier Management Symposium

By Anne Guglielmo, CFPS, CHFM, CHSP, LEED A.P.

The Barrier Management Symposium is a joint program with participants from Firestop Contractors International Association (FCIA), The Joint Commission (TJC), Underwriters Laboratory (UL), The Door Hardware Institute (DHI), AWC and the Gypsum Institute, Fire Damper Industry, Fire Rated Glazing Industry, the National Concrete Masonry Association, and the American Society for Healthcare Engineering (ASHE).

The purpose of this day and a half long seminar is to bring education and training to Healthcare Facility Managers, front line staff and contractors about design, installation, inspection and maintenance of rated barrier systems.

The goal of the symposium is to provide the attendee with the tools and knowledge necessary to go back to their facilities and determine the correct location of all rated barriers in the facility, assess the condition of the barriers, and determine if corrective actions are necessary.

Using the tools and knowledge gained, when corrective actions are needed, the attendee will be able to implement the necessary repairs to bring the existing barriers into compliance with the Life Safety Code and restore the condition of the barriers that are providing the necessary compartmentation protecting the occupants of the healthcare structure. This can be achieved by using trained in house staff or using qualified contractors per the organizations policies and practices.

The Centers for Medicare and Medicaid Services (CMS) deem The Joint Commission as an Accrediting Organization (AO). As an AO, TJC surveys hospitals on approximately a three year cycle.

Consistently, scores in the Life Safety Chapter for non-compliant fire barriers are represented in the top ten of all standards scored on survey. Surveyors often find breaches in fire and smoke barriers at improperly protected penetrations, incorrectly installed fire dampers, non-functioning fire and smoke doors and improperly installed opening protectives.

Examples include penetrations in fire and smoke barriers found firestopped with unapproved materials, firestopped using incorrect methods or left not firestopped at all. Fire doors and smoke barrier doors are found with non-functioning hardware, excessive gapping and undercuts and with the incorrect fire rated labeling required for the type of door installed. Fire dampers are found to be installed upside down, with hardware disabled or simply not functioning properly.

Due to recent changes brought on through the CMS deeming process, TJC has renewed its focus on the Plan for Improvement Process (PFI) found in the organization's Statement of Conditions (SOC). When a hospital identifies life safety deficiencies in their facilities, like the ones identified above, there are multiple avenues available to correct the deficiency.

In a perfect world, all deficiencies would be corrected immediately. If it is possible to correct the deficiency immediately, that is the preferred method. If the deficiency can be fixed within 45 days, the organization is permitted to correct the deficiency through their maintenance work order system. If the deficiency will take longer than 45 days to complete, the organization is required to complete a Plan for Improvement. All work orders (pertaining to life safety deficiencies) and PFIs are required to be assessed for the need to implement Interim Life Safety Measures (ILSMs). ILSMs are actions taken to compensate for the life safety deficiency found until such time as the necessary work can be completed to repair the deficiency and are based on policy criteria.

In order for fire and smoke barrier deficiencies to be managed correctly it is important that the organization have the information necessary to document the conditions and necessary corrective actions. The location of the deficiency (2nd floor occupancy separation wall), the type of deficiency (5 conduit penetrations and non-latching fire door), necessary corrective action (firestopping and new hardware installation), time to correct deficiency (4 week order time for parts, 4 man hours) and cost (\$700) are needed to properly document the condition whether using the maintenance work order system or a PFI. Clear communication with those completing the work, be it in house staff or outside contractors, is critical. The symposium not only identifies the commonly scored issues found on survey, but discusses the PFI and ILSM process, and required documentation.

The Symposiums are being held in conjunction with the different ASHE chapters throughout the country. Each ASHE region will host a Symposium for its members over 2014, 2015 and 2016 with three to four sessions taking place over the course of the year.

The participants presenting the symposium are volunteering their time and talents to this program so that it can be held without cost to the participant for the program. While taking time away from the hospital is always difficult, the cost of training is often a limiting factor when it comes to training

opportunities in the healthcare environment. There may be travel, lodging and hosting costs out of town participants will have to absorb, but through this free program the opportunity for multiple participants from the same organization attending is more likely.

In March of this year the first of ten Barrier Management Symposiums took place in ASHE Region 4 in Birmingham, AL. The second took place in May in ASHE Region 2 in Philadelphia, PA. The feedback received from attendees has been very positive. Many of the attendees have commented that the Symposium provided them with tools to take back to their organizations that will help with improving contractor project review and close out, development of above the ceiling work permit programs, ways to enhance existing monthly rounding activities, and methods for establishing and implementing building maintenance programs. All of these items have an end goal of establishing a solid barrier management program that will help achieve code compliance, improve survey results, foster a culture of constant survey readiness and most importantly protect all patients and visitors in the healthcare environment.

Registration at each symposium is open to all ASHE members of the host region first, other ASHE members second, and all others last. The number of available seats will vary based on location, so it is recommended that anyone interested in attending check with the local sponsoring ASHE Chapter.

Information about current and upcoming Barrier Management Symposiums can be found on the ASHE website as well as the FCIA website. The next Symposium will be held in ASHE Region 9 in Long Beach, California September 17 and 18 on the Queen Mary. Exact dates and locations for the 2015 Barrier Management Symposiums will be released later this year. 🔥

Anne Guglielmo is an Engineer at the Joint Commission, Oakbrook Terrace, IL.



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Proper Barrier Management Starts With Using Proper Terms

By William E. Koffel, P.E., SFPE, President, Koffel Associates, Inc.

Quite often I am asked a question about a certain wall or partition and the person will refer to the assembly as a fire wall. Before answering the question, I will typically ask "Do you really mean fire wall?" The phrase "fire wall" has a specific meaning in codes as does "fire barrier" and "fire partition." Likewise, "smoke barrier" and "smoke partition" refer to different types of wall assemblies. The improper identification of a wall assembly can lead to applying the incorrect code requirements to the particular assembly.

Distinguishing Factors

From a fire protection standpoint, there are five distinct factors for each type of wall assembly:

- Fire or smoke performance, such as fire resistance rating
- Continuity
- Structural requirements
- Permitted materials of construction
- Protection of openings and penetrations

There will also be instances in which the International Building Code (IBC) and the Life Safety Code (NFPA 101) use different types of wall assemblies in a particular application and those differences will be highlighted as well.

Below are the types of wall assemblies from both codes:

Fire Walls

Fire wall is a phrase found in the IBC but not in NFPA 101. Fire walls are an alternative to exterior walls with respect to determining the separation between buildings. Insurance companies also use the phrase fire wall to determine what is often referred to as the maximum foreseeable loss, a property protection concept.

Whereas NFPA 101 does not limit building area, typically there is no other reason for using a fire wall other than separating types of construction. With respect to NFPA 101, a fire barrier having a two-hour fire resistance rating may be used to separate different types of construction.

The fire resistance rating of a fire wall is determined by the occupancies located within the building and typically is required to be at least two hours.

Fire walls are required, at a minimum, to extend to the underside of the roof deck and to the exterior wall.

There are times when a fire wall is required to extend beyond the roof line or beyond the exterior wall.

One of the unique performance requirements for a fire wall is the need to be structurally stable. The IBC requires a fire wall to be such that the structure on one side of the wall can collapse and the wall will remain in place.

In most instances, a fire wall is required to be of noncombustible construction although the IBC does contain an exception for wood frame construction.

Openings and penetrations of fire walls are limited and where they exist, they must be properly protected.

Fire Barrier

When creating fire compartments as required by NFPA 101, the compartment is created using a fire barrier.

The IBC also uses the phrase fire barrier but also uses the concept of a fire partition. The fire resistance rating of a fire barrier is determined by the code and is based upon the specific application and the occupancies involved. In the IBC, the fire resistance ratings will typically vary between 1 hour and 4 hours.

In NFPA 101, the fire resistance ratings will typically vary between 30 minutes and 2 hours.

In both the IBC and NFPA 101, fire barriers are required to extend to the roof or floor deck above and to the exterior wall or to another fire barrier.

While fire barriers do not have the same structural stability requirements as fire walls, in many cases the fire barrier is required to be supported by construction that has a fire resistance rating equivalent to the rating of the fire barrier. The materials permitted to be used in a fire barrier are determined by the type of construction for the building. Openings and penetrations of fire barriers are controlled and where they exist, they must be properly protected.

For example, fire windows in fire barriers are often limited to a certain percentage of the wall area or length. For example, NFPA 101 and the IBC¹ limit the area of fire protection-rated glazing in fire barriers to 25% of the wall area.

Both code documents also have additional restrictions on openings and penetrations if the fire barrier is separating an exit from other parts of the building.

Fire Partitions

The phrase fire partition is not used in NFPA 101 but is used in the IBC to address fire resistance-

1 It should be noted that this criteria is from the 2012 Edition of the IBC and does vary in some earlier editions.

rated wall assemblies used as corridors, dwelling unit separations, and a few other applications.

In the IBC, fire resistance ratings vary from 30 minutes to 1 hour depending on the application.

Fire partitions are required to be continuous to the outside wall or to another fire partition but vertically, fire partitions may terminate at the underside of a rated floor/ceiling or roof/ceiling assembly.

There are no special structural requirements for fire partitions and the materials permitted to be used in a fire partition are determined by the type of construction for the building. Openings and penetrations of fire partitions are controlled and where they exist, they must be properly protected.

The fact that the IBC refers to rated corridor walls as fire partitions and NFPA 101 refers to rated corridor walls as fire barriers creates different code requirements for such walls.

When a corridor wall is required to have a fire resistance rating in accordance with NFPA 101, the corridor wall must be continuous to the underside of the roof or floor deck above.

However, as a fire partition a corridor wall required to have a fire resistance rating in accordance with the IBC may terminate at the underside of a rated floor/ceiling or roof/ceiling assembly.

Smoke Barriers

Both the IBC and NFPA 101 use the phrase smoke barrier as a major compartmentation feature for certain occupancies, such as health care occupancies (Group I-2) and detention and correctional occupancies (Group I-3).

There are some other applications for smoke barriers but the compartmentation requirements for certain occupancies are the most common.

In most cases, new smoke barriers are required to have a one hour fire resistance rating. Smoke barriers are to be continuous to the exterior wall or another smoke barrier and vertically, smoke barriers are generally required to be continuous to the roof deck of floor deck above.

There are no special structural requirements for smoke barriers and the materials permitted to be used in the construction of a smoke barrier are determined by the type of construction for the building. Openings and penetrations in smoke barriers are required to be protected however there are some differences between the two codes.

With respect to door openings, NFPA 101 requires the doors to be constructed be capable of resisting the passage of smoke and in most cases the doors are not required to be tested as smoke leakage-rated doors. In some instances, such as health care occupancies, NFPA 101 requires the doors to be similar to a 20-minute fire protection rated door but the Codes stops short of

requiring a true fire door since latches are not required. The IBC requires smoke barrier doors to be 20 minute smoke- and draft-control door assemblies when the smoke barrier is required to have a fire resistance rating. The IBC also contains a requirement regarding the L-rating for through penetration firestop systems used to protect openings in smoke barriers.

Smoke Partitions

The phrase smoke partition started within NFPA 101 and was originally intended to apply to non-rated corridor wall assemblies. However, most occupancy chapters do not require such walls to be smoke partitions. There are some other applications for smoke partitions defined in NFPA 101, such as the separation of hazardous areas that are protected with an automatic sprinkler system. In the IBC, smoke partitions are used to define corridor walls in Group I-2 occupancies protected with an automatic sprinkler system and may be used for certain elevator lobby separations.

Smoke partitions typically are not required to have a fire resistance rating. Smoke partitions may terminate at the underside of a ceiling system that is designed to resist the passage of smoke. There is a difference between NFPA 101 and the IBC in that NFPA 101 does recognize certain lay-in acoustical tile ceiling systems as being capable of resisting the passage of smoke while the IBC does not.

Smoke partitions do not have any specific structural requirements and the materials permitted to be used in a smoke partition are based upon the type of construction for the building. Openings and penetrations are required to be protected to prevent the spread of smoke but typically there is limited performance criteria given other than the requirement for the doors to be self-closing or automatic-closing.

Summary

The intent of this article is to expose the readers to the types of wall assemblies that are required by both the IBC and NFPA 101. The article discusses each type of wall assembly in general terms and one should refer to the applicable code(s) for the specific requirements.

However, the reader should have a basic understanding of the performance requirements that distinguish the different type of wall assemblies. 🔥

Bill Koffel is President, Koffel Associates and has been FCIA's Code Consultant for many years. He can be reached at wkoffel@koffel.com. (www.koffel.com)

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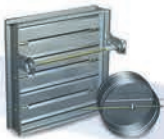
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Behind the Scenes - The Testing of Fire Resistive Construction

By Richard N. Walke, Senior Regulatory Engineer, UL LLC

Editors Note: In a related article, Bill Koffel, Koffel Associates explains what the fire resistance rated construction is called in the IBC and NFPA Codes. Check it out in this issue of *Life Safety Digest*.

The International Building Code (IBC) and the NFPA 101 Life Safety Code (LSC) contain many provisions which require the use of fire-resistance-rated construction.

Fire-resistance-rated construction assemblies are intended to subdivide a building into smaller fire areas, create areas of refuge, protect property or create means of egress. It accomplishes these objectives through the use of materials and construction techniques which are designed to resist the long term effects of a fully evolved building fire. The code provisions define the required fire performance of building elements in terms of an hourly fire-resistance rating, typically ranging between 1/2 hour and 4 hours.

Both the IBC and the LSC require fire-resistance ratings to be determined in accordance with ASTM E 119 or ANSI/UL 263, "Fire Tests of Building Construction and Materials." Although published by different organizations, these two standards describe the same test procedure and contain the same conditions of acceptance, and as such are considered by most to be interchangeable.

Both standards define a fire test procedure which develops an hourly fire-resistance rating of a column, beam, floor or roof, or wall when subjected to a standard fire exposure test. During this time period, the structural elements need to continue to support the structure, and floor or roof, and wall assemblies need to contain the fire.

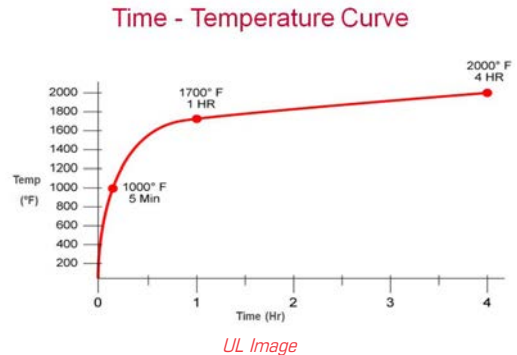
Fire Testing Procedure

For fire testing purposes, ASTM E 119 and ANSI/UL 263 divides a structure into four major elements; namely, columns, beams, floors or roofs, and walls. Each element is tested independently.

In the case of beams and columns, the test sample is placed within the furnace so as to be surrounded by flame on three or four sides, respectively. In the case of floors or roofs, and walls, the test sample under investigation becomes part of the furnace; with the furnace representing a room that is totally engulfed in flame.

All fire resistance tests are conducted with the furnace temperature controlled in accordance with the standard time-temperature curve as shown in Illustration 1. This curve dictates that the temperature

will reach 1000°F at 5 min, 1700°F at 1 hour, 1850°F at 2 hours and 2000°F at 4 hours.



As an example, let's look at how a fire-resistance rating is established on a wall assembly. The wall could be a fire or smoke barrier. The standards specify the test assembly shall be a minimum of 100 sq. ft. in size, with no dimension being less than 9 ft. in length. The test assembly is constructed within a test frame which in turn integrates into the test furnace. Illustration 2 shows a typical construction of a gypsum board wall assembly.

After any required curing, the test frame containing the test specimen is secured to the furnace. If the wall is intended for load bearing applications, it will be loaded during the fire testing using hydraulic rams located beneath a movable sill.

The furnace fire is then ignited. The gas flow is adjusted such that the temperature within the furnace follows the standard time-temperature curve. During the test, visual observations are recorded on the performance of the assembly, along with deflection and temperature data. The fire exposure test is continued until one of the end point conditions of acceptance contained in the standards is reached, or the desired rating period is reached.

The test frame is then pulled away from the furnace. The conditions of acceptance contained in the standards for the fire exposure test require the following:

1. The wall assembly shall have sustained the applied load during the rating period without permitting the passage of flame or passage of gases hot sufficient to ignite cotton waste.
2. The transmission of heat through the wall assembly during the rating period shall not have raised the average temperature or individual point temperature on its unexposed surface to more than 250°F or 325 °F above its initial temperature, respectively.

In addition to the fire exposure test, wall assemblies are also subjected to a hose stream test. The hose stream test evaluates the ability of the wall to resist the impact of falling debris during fire conditions. Falling



UL Photo

debris could include ceiling tiles, light fixtures and other elements attached to the ceiling. The hose stream test evaluates the ability of the wall to resist the impact without damage which would allow fire to spread from one fire area to another.

A second test sample is constructed for the hose stream test. This second assembly is exposed to a standard time-temperature fire exposure for one half the rating period previously determine, or 1 hour, whichever is less. It is then removed from the furnace and subjected to a water hose stream applied to the fire side of the assembly as shown in Illustration 3. For a typical 2 hour assembly, the hose stream is applied for 2-1/2 min at a pressure of 30 psi.

The conditions of acceptance contained in the standards require that the wall assembly shall have sustained the applied load during the hose stream test without developing openings that would permit a projection of water from the hose stream beyond the unexposed surface.

Breaches of Fire-Resistance-Rated Construction

As we have seen, a fire-resistance-rated assembly – fire barrier, fire wall, smoke barrier etc., – is designed to confine a fire. Theoretically, to function properly, an assembly would have no openings that could permit flames or hot gases to pass from one side of the assembly to the other.

However, without openings, walls or floors are impractical, since they would not allow for movement of people within the building, nor would they allow for the passage of the necessary ventilation, plumbing, communication and electrical services.

The IBC and the LSC both permit breaches in fire-resistance-rated construction, but contain requirements that they be protected so as to maintain the intended function of the assembly.

The two codes go on to define the test standards to be utilized in the evaluation of the products used to protect these breaches. The referenced standards contain test requirements and conditions of acceptance which complement the requirements of ASTM E 119 and ANSI/UL 263.

The specific test standards required by the codes for each of the breaches through, between or within fire-resistance-rated construction are as follows:

1. Penetrations – ASTM E 814 or ANSI/UL 1479, entitled “Fire Tests of Through-penetration Firestops”

2. Fire-Resistant Joint Systems – ASTM E 1966, entitled “Fire-Resistant Joint Systems” or ANSI/UL 2079, entitled “Tests for Fire Resistance of Building Joint Systems”
- Opening Protectives – NFPA 252, entitled “Standard Method of Fire Tests of Door Assemblies”, ANSI/UL 10B, entitled “Fire Tests of Door Assemblies”, ANSI/UL 10C, entitled “Positive Pressure Fire Tests of Door Assemblies”, NFPA 257, entitled “Standard on Fire Test for Window and Glass Block Assemblies”, ANSI/UL 9, entitled “Fire Tests of Window Assemblies” and ASTM E 119 or ANSI/UL 263, entitled “Fire Tests of Building Construction and Materials.
- Duct and Air Transfer Openings – ANSI/UL 555, entitled “Fire Dampers” and ANSI/IL 555C, entitled “Ceiling Dampers”

Certification Considerations

After an assembly has been tested by a third party testing and certification organization, and found to comply with the required standard, the ratings and a detailed description of the construction of the assembly, including specifications of the materials are published in a product directory of the testing laboratory.

In the case of assemblies evaluated by UL, the results are published in the UL Fire Resistance Directory, the Fire Resistance Directory on CD-ROM and the Online Certifications Directory at www.ul.com/database. 🔥

For more information on the testing of fire-resistance-rated assemblies, please contact Rich Walke in Northbrook, Ill. at Richard.N.Walke@ul.com or at +1.847.664.3084.

Directories of Fire-Resistance-Rated Construction

There are nationally recognized testing laboratories that test products to the test standards to comply with the code requirements for fire resistance.

UL’s Fire Resistance Directory or Online Certifications Directory (www.ul.com/database) are known worldwide for the wide array of tested and listed systems for fire rated walls and floors, firestopping, fire rated glazing, fire and smoke dampers, fire rated doors with builders hardware.

FM Global’s research campus southwest of Boston, MA has a very complete laboratory that performs fire testing. Tested and Listed Systems are available at www.approvalguide.com.

Intertek tests products for use in fire resistance as well. Visit www.intertek.com to find their directory. Click on Fire Resistance and Suppression for info.

Southwest Research Institute, based in San Antonio, TX, also has fire testing facilities. <http://www.swri.org/>. Southwest is where the multi story test apparatus was first developed.

The NEW 2012 IBC & Special Inspection Agency / Firestop Inspector Qualifications

By Eric Keeton and Randy Bosscawen

Why is there independent inspection required for firestopping now on construction projects? There are actually several reasons. First, standards were built for inspection.

FCIA collaborated with ASTM Members to build the ASTM E 2174 and ASTM E 2393 Standards for the Inspection of Installed Firestop Systems. The Standards Committee then worked with International Accreditation Services (IAS), to add firestopping to IAS Accreditation Criteria AC 291 for Special Inspection Agencies.

FCIA was also the code proponent to put the ASTM E 2174 & ASTM E 2393 Inspection Standards into the International Code Council's (ICC) 2012 International Building Code (IBC).

That's why there is now 'Special Inspection' required for buildings. Read on for the rest of the story...

In ICC's IBC Chapter 17, it states that there are qualifications required to prove to the building official that **Special Inspection Agency/Approved Agency**, and **Personnel** are qualified. The Special Inspection Agency is hired by the Building Owner/Manager or the building owners agent such as a construction manager. (see sidebar, this issue, for the details about how this gets done)

First, there is a code requirement requiring firestopping to have Special Inspection. The requirement can be found in 1705.16. From the IBC, this section mentions the type of building that needs special inspection for firestopping. Other sections of 1705 cover the many special inspection items in the code.

1705.16 Fire-resistant penetrations and joints. *In high-rise buildings or in buildings assigned to Risk Category III or IV in accordance with Section 1604.5, special inspections for through-penetrations, membrane penetration firestops, fire resistant joint systems, and perimeter fire barrier systems that are tested and listed in accordance with Sections 714.3.1.2, 714.4.1.2, 715.3 and 715.4 shall be in accordance with Section 1705.16.1 or 1705.16.2. [IBC 1705.16]*

1705.16.1 Penetration firestops. Inspections of penetration firestop systems that are tested and listed in accordance with Sections 714.3.1.2 and 714.4.1.2 shall be conducted by an approved inspection agency in accordance with ASTM E 2174. [IBC 1705.16.1]

1705.16.2 Fire-resistant joint systems. *Inspection of fire resistant joint systems that are tested and listed in accordance with Sections 715.3 and 715.4*

shall be conducted by an approved inspection agency in accordance with ASTM E 2393. [IBC 1705.16.2]

The requirements are specified in IBC's Chapter 17, Special Inspections, **Section 1703**. Below are specific passages:

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. [ICC's IBC 1703.1] (Bold emphasis added)*



Firestop installations can be viewed by special inspection personnel as being installed or destructively tested.
FCIA Photo

NOTE: The Approved Agency must meet applicable requirements such as independence of the company and inspectors to the contractors, calibrated equipment and experienced personnel educated in

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 possible conflicts of interest so that objectivity can be confirmed.*

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

1703.1.3 Personnel. *An approved agency shall employ experienced personnel educated in conducting, supervising and evaluating tests and/or inspections. [ICC's IBC 1703.1.3]*

To meet code requirements above and approve the Special Inspection Agency, there are actually two parts. The Company needs to be approved and so do the individual inspectors that will look at the firestopping.

To meet the 1703.1, FCIA worked with IAS to develop a special Firestopping Section in the AC 291

Accreditation Criteria for Special Inspection Agencies to comply with 1703.1.

For the 1703.1.3 requirement, the FM & UL Firestop Exams are used as part of IAS AC 291 Accreditation for the responsible person. (Visit www.fcia.org, inspection agency accreditation link, for info)

Either the FM or UL Firestop Exam, or both, prove to AHJ's who approve both the 'Agency' and 'Individual Inspectors' that Personnel are educated, and meet requirements in 1703.1.3. This exam is a great way to prove this knowledge.



Labeling identifies the firestop system reducing inspection costs.
FCIA Photo

The FM & UL Firestop Exam

The FM & UL Firestop Exams are currently the only true 3rd party administered exams that test the knowledge of the individual inspector to prove to the AHJ that the person's understanding of the industry can provide educated inspection. These individuals may become appointed as a responsible person by the Special Inspection Agency Company. FM & UL provide the unbiased ability to grade these exams fairly.

FCIA's Firestop MOP

FCIA's Firestop Manual of Practice (MOP) is the industry resource document. With over 1,000 pages of valuable firestop knowledge, the MOP is the study document for the FM & UL Firestop Exams. Systems analysis and firestop industry knowledge are big parts of both exams and critical to both inspectors and contractors.

FCIA's MOP is offered FREE to Governmental Building Code Officials, Fire Marshals, and Specifiers with Design Firms (RSW's, CCS's, etc.). Email info@fcia.org to request. Others, FCIA Members or not, can buy the document.

IAS AC 291

The International Accreditation Service (IAS) IAS AC 291 offers a credible certification for special inspection agencies. The accreditation is in multiple parts.

First, for Firestopping, an individual must pass the FM or UL Firestop Exam. There are many other disciplines that have special inspection required. Those disciplines have special knowledge requirements for the individual as well.

Second, the special inspection agency (company or sole proprietor) needs to have a management system manual for its operations. The management system manual is the 'recipe' that outlines how the firm operates.

Third, the management system is audited by IAS's personnel to verify that the company operates as it says it does in the management system manual. To maintain IAS Accredited Special Inspection Agency status, the company is audited again annually.

FCIA recommends IAS AC 291 Special Inspection Agency Accreditation

Why? The IAS AC 291 Special Inspection Agency is a complete package. IAS AC 291 is focused on both the inspection company and the individual inspector.

To inspect...or contract...properly, the company needs to understand the firestopping 'zero tolerance' attitude required to get the firestop products into penetrations and joints to the tested and listed system. The systems are found in the Directories, online or print, from the testing laboratories. FM Approvals, Intertek, Southwest Research and UL publish directories with Fire Resistance listings.

The Company is where the risk resides as well. Business risk, both financial and operational, insurance, and company culture will dictate whether firestopping is installed to the tested and listed system.

FCIA believes that the IAS AC 291 Accredited Special Inspection Agency is best to inspect Firestopping to ASTM E 2174 or ASTM E 2393. Want to become IAS Accredited? Get on the path to accreditation now.

Start by getting the FCIA Firestop MOP at www.fcia.org. Visit www.iasonline.org to download the Special Inspection Agency AC 291 Accreditation Criteria free. Buy the ASTM E 2174 and ASTM E 2393 Standards for the Inspection of Penetration and Joint Firestops at www.astm.org. The standards are inexpensive at under \$50.

The Best Scenario?

When an IAS AC 291 Accredited Special Inspection Agency is used in conjunction with a FCIA Member, FM 4991 or UL Qualified Firestop Contractor, firestopping gets the right amount of inspection...not too much, not too little, and the right total cost of construction.

The FCIA Accreditation Committee worked with FM Approvals to build FM 4991, Standard for Approval of Firestop Contractors and UL's Qualified Firestop Contractor Program to provide a quantifiable way to qualify firestop contractors to be inspected.

At FCIA, we can say we planted the seeds for the special inspection agency consultant industry as part of the DIIM strategy. Proper Design, (Tested and Listed Systems) Installation (FCIA, FM 4991, UL Qualified Firestop Contractors), Inspection (ASTM E 2174, ASTM E 2393, IAS AC 291) and Maintenance/Management, (Barrier Management Symposiums)...continues to be the rally call for the fire resistance industry to protect people in buildings through firestopping and effective compartmentation. 🔥

Eric Keeton, FCIA 2014 President and Randy Bosscawen, FCIA Past-President have been Chairs of FCIA's Standards Committees for the past several years. Reach Eric at ekeeton@daltonprotection.com and Randy at rbosscawen@multicon.us.

Sidebar – How are Special Inspection Agencies Hired – The Details

First, there is a code (or other) requirement for special inspection. Special inspection is over and above those inspections as shown in Section 110, Inspections, in the International Building Code:

[A] 110.1 General. Construction or work for which a permit is required shall be subject to inspection by the *building official* and such construction or work shall remain accessible and exposed for inspection purposes until *approved*. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other ordinances of the jurisdiction. Inspections presuming to give authority to violate or cancel the provisions of this code or of other ordinances of the jurisdiction shall not be valid. It shall be the duty of the *permit* applicant to cause the work to remain accessible and exposed for inspection purposes. Neither the *building official* nor the jurisdiction shall be liable for expense entailed in the removal or replacement of any material required to allow inspection. [IBC 110.1]

Firestopping is included in this 'IBC Chapter 1' inspection and has been for some time. It is only since the 2012 IBC that Firestopping Special Inspections have been mandated for buildings 75' and higher above lowest fire department access and category III and IV buildings referenced in table 1604.5. The 'Special Inspections', Chapter 17 of the IBC, covers the details of Special Inspection, in the General Section, scope:

1701.1 Scope. *The provisions of this chapter shall govern the quality, workmanship and requirements for materials covered. Materials of construction and tests shall conform to the applicable standards listed in this code. [IBC 1701.1]*

In section 1702, Definitions are covered. Then, in 1703, Approvals are discussed. The Approval of the Special Inspection Agency is the first thing that is mentioned:

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. [IBC 1703.1]*

The key element is that the building official approves the Agency and the individual. In the Agency Approval, there are three key elements that the AHJ uses for evaluation of the special inspection agency. First, independence from economic interests is addressed in 1703.1.1:

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 possible conflicts of interest so that objectivity can be confirmed.

Second, Equipment must be calibrated as shown in 1703.1.2:

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

And, third, Personnel must be experienced:

1703.1.3 Personnel. *An approved agency shall employ experienced personnel educated in conducting, supervising and evaluating tests and/or inspections.*

Knowing the code requirements, how does special inspection actually get completed?

The Specification Community starts the process. Specs are written for various disciplines based on minimum code requirements. Master Specification Systems such as MasterSpec and SpecLink, SpexCA have references for firestop special inspections already.

Once special inspections are specified, qualifications for the inspection agency are also specified. Special Inspection Agency qualifications such as International Accreditation Services IAS AC 291 can be used by the AHJ as a proof that the agency has experience AND personnel who are experienced in the field of firestopping.

Once the project becomes a reality and a construction team is chosen, The Construction Manager then contracts with a special inspection agency for firestopping. This is no different than contracting for other trades such as concrete, structural welding, SFRM or IFRM Fireproofing and more. The CM will also verify with the jurisdiction that the company is approved for this type of inspection.

During construction, reports are forwarded from the special inspection agency to the CM who then forwards to the contractor any deviations as stated in the inspection standards. The architect is also copied for review and filed appropriately.

After the work is complete, the special inspection agency forwards the final report to the CM, who sends to the AHJ. The AHJ then completes a final inspection and reports with findings, hopefully positive.

It is actually very economical to use a specialist firestop contractor on projects where special inspection agencies are used for firestopping. Why? The Firestop Contractor understands the technical attention to detail needed for firestopping to be installed correctly.



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A Clearer View of Fire-rated Glazing Systems

By Jeff Razwick

Twenty five years ago, it was difficult to see past the design restraints of traditional, polished wired fire-rated glass. Industrial and very institutional in appearance, prone to breakage and unable to defend against heat transfer during a fire, its use was limited.

In the late 20th century, the development of wireless fire-rated glass with heat-blocking capabilities opened the door to new design possibilities. Manufacturers could pair these new products with advanced fire-rated framing to create fire-rated glazing systems that extend from wall-to-wall and across multiple stories. For the first time, design professionals could specify fire-rated curtain walls, doors assemblies and transparent fire-rated glass walls.

Today, fire-rated glass is increasingly available as part of comprehensive glass and framing systems, instead of only as individual components. Multi-functional and sophisticated, these advanced systems work together to help building teams achieve a higher level of performance.

Greater design flexibility

Each component of a fire-rated glazing system works in conjunction with and supplements the others to achieve a specific level of fire and life safety protection. This is particularly valuable for locations that require fire-resistive products to block heat transfer.

Fire-resistive products are tested to ASTM E-119 and UL 263, which are the fire-resistance standards for walls. Fire-resistance-rated glazing systems carry fire ratings up to 120 minutes, pass the fire and hose stream tests and block significant amounts of heat.

Given the high performance levels of fire-rated glazing systems, many are available for interior and exterior use where building codes require a “fire-resistant” enclosure. This can include, but is not limited to, wall and floor applications requiring a 60-minute or greater fire rating, such as stairwells or exit access corridors.

Fire-rated glazing systems can also be used in exterior applications with high building density and

narrow setbacks from lot lines to help prevent a fire from spreading to other nearby buildings.

Complete fire protection

Another benefit of fire-resistive glass systems is the assurance that the entire assembly meets code requirements. All components are designed and tested in the same assembly, to the same standard, resulting in a tested and listed system. This is critical since the IBC requires all elements within a fire-resistive glazing assembly—from the frame to the glass, seals and other components—to provide the same type of fire resistance and carry the minimum fire rating as stated in the code.

Since fire-rated glazing system components are designed and tested together, it is important to use all supplied components and install to the tested and listed system from one of the nationally recognized testing laboratories, such as Underwriters Laboratories (UL).

While it may be tempting to swap out a system component with an “equal” product because it carries the same fire rating or meets a specific design aesthetic, it can jeopardize the safety of the building if other crucial performance criteria are not met. Consider the example of a two-hour, fire-resistance-rated curtain wall assembly. As total building costs escalate, there might be a desire to explore substituting “equal or better” materials in the tested and listed fire-resistance-rated curtain wall assembly to reduce costs. If the substituted material hasn’t been approved for use through testing or manufacturer’s engineering judgment, the frames and glass could end up not providing the level of intended performance.

To ensure appropriate use, manufacturers or suppliers can provide design assistance and aid in the development and testing of custom systems.

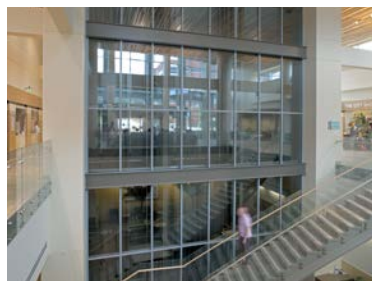
Beyond basic building compartmentation

No longer limited to sequences of borrowed lites and separate transparent fire-rated wall panels,



Fire-rated glazing systems have the unique ability to limit the spread of fire in expansive buildings while maintaining an open feel.

Technical Glass Products Photo



Fire-resistive-rated glass systems can exceed 25 percent of the total wall area, allowing for greater design flexibility.

Technical Glass Products Photo

building teams can use large fire-rated glazing systems in areas that would otherwise require opaque fire-resistance-rated wall materials.

This is a critical benefit for modern buildings with open layouts. Large interior spaces, such as those created by a multi-story atrium, present an opportunity for faster fire growth given greater air volumes. According to the U.S. National Association of State Fire Marshals, this type of design can create “a lack of compartmentation that would serve to limit fire spread to a smaller area, such as a room or a wing or a floor of a building.”¹



A fire-rated glass floor system transfers light into Northwestern University's Engineering Life Sciences infill.
Technical Glass Products Photo

Transparent in nature, fire-rated glazing systems have the unique ability to limit the spread of fire in expansive buildings while maintaining an open feel. A case in point is Northwestern University's Engineering Life Sciences Building infill.

The design at this structure called for a five-story central atrium to promote a collaborative learning environment. In order to maintain a sense of shared space, the design team faced the challenge of satisfying the atrium's two-hour fire separation code requirement without compromising the light-filled design.

The design team found their solution with a two-hour, fire-resistive-rated glass floor system. “We needed a fire-resistance-rated assembly in the atrium, but we didn't want researchers and students to be in the dark,” said Matt Garrett, project architect at Flad Architects. “The fire-rated glass floor system allowed us to compartmentalize a very large volume of space without blocking off access to daylight.”

Today, building teams can orient fire-rated glazing systems in a number of beneficial ways to reduce a building's volume and support daylight transfer. For instance, incorporating fire-rated glass curtain walls in common rooms or using fire-rated glass wall assemblies in corridors to draw daylight into previously hard to illuminate interior spaces.

Specifying fire-rated glazing systems

As with many other materials, designing with fire-rated glazing systems requires consideration of codes, performance characteristics and a wide range of other contributing factors. To ensure proper use, consult the manufacturer or supplier with any questions, if:

- it is the team's first time using a given fire-rated glass system;
- a fire-rated curtain wall needs to visually match a neighboring non-fire-rated curtain wall;
- a multi-story curtain wall is required;
- using an exterior fire-rated glazing system (*i.e.*,

curtain wall or roof assembly);

- impact-resistant glass, bullet-resistant glass or energy-efficient glass is required; or
- a custom application may require additional testing.

Maintaining form and function

While fire-rated glazing systems can advance fire and life safety, they also improve aesthetics. Many modern fire-rated glazing systems utilize new generation fire-rated steel frames that can improve sightlines and views, and allow for smooth integration with surrounding applications.

Maintaining visual consistency between fire-rated and non-fire-rated materials is critical for design professionals. Potential trade-offs between fire and life safety requirements and appearance can lead to shortcuts that ultimately reduce fire safety in the building. 🔥

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

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1 See Jim Tidwell and Jack Murphy's "Bridging the Gap: Fire Safety and Green Buildings" (National Association of State Fire Marshals, 2010), available at greenbuildingfiresafety.org/PDF/NASFM_greenfire_guide.pdf.

FyreWrap® DPS Insulation just opened the door to improved dryer duct fire protection.



Recent NFPA statistics indicate significant injuries, loss of life and property damage due to clothes dryer fires in residential buildings. At the same time, code requirements for dryer exhaust ductwork in multi-family residences have been difficult to achieve in real-world conditions – until now.

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Firestop Contractor Company Certifications - How to Choose?

Aedan Gleeson & Don Murphy, FCIA Accreditation Chairs

In the early 1960's, the Japanese auto manufacturers embarked on a management system based approach to car assembly processes which produced some very high quality, reliable cars in the late 1970's. The North American auto manufacturers responded, with auto makers like Ford stating, 'Quality is Job 1'. These North American car makers knew they had to react as market share was being stolen by foreign manufacturers reliable, well performing vehicles. As a result, the quality management system process got moving in North America in a big way.

Generally, the construction sub-contracting industry has not yet embraced the 'management system approach'. Some large building owners require General Contractors to have their management systems audited and proven repeatable which produces a more reliable building. Specifications exist requesting that the firms have their management system certified. Building owners and managers are starting to understand the concept.

In Firestopping, this 'quality management system' movement was recognized 15 years ago by the Firestop Contractors International Association (FCIA) Steering Committee. One of the group's goals for the future organization was to focus on differentiating contractors who specialize in firestopping from all the others who may look at the industry as a bunch of red caulk to be flung in holes and openings.

Building Owner/General Contractor Firestopping Choices

Currently, there are three methods for purchasers of firestop installations to use...Free for All, Free for all combined with Specialty Firestop Contractor and Single source Firestop Contractor .

Free for All Firestopping - In this 'Free for All Firestopping Method, 'he or she who pokes the hole fills it', is the method for firestopping installation.

Free For All, Specialty Firestop Contractor – In the combined Free For All and Specialty Firestop Contractor method, some random trades install their own firestopping and some firestopping work is awarded to a specialty firestop.

Single Source Firestop Contractor – In this method, the General Contractor, Building Owner or Manager, or other hiring authority assigns all firestopping work to a single company.

Current Qualifications in Specifications

Specifiers for years have been trying to write contractor qualifications into specifications for firestopping to result in a specialist firestop contractor being the preferred provider for firestopping installations. In CSI-CSC's MasterFormat , the 07-84-00 Firestopping Specification has had great discussion amongst the specification community.

In 07-84-00, several qualifications seem common amongst specifications from various firms including...

FCIA Member in Good Standing –Specifications exist where "FCIA Member in Good Standing" is a contractor qualification required to perform the work. In order to be a FCIA Member in good standing, the contractor firm must have been a member for two continuous years.

'X' years experience on similar projects – FCIA agrees that for a contractor to perform work on a very complex project, there should be commensurate experience in such facilities. Certain building occupancies have special needs. Healthcare has privacy, infectious disease control, cleanliness, above ceiling permit programs, and more. Educational and other occupancies have security issues.

"Approved / Certified by the Manufacturer"
– Currently, there are no longevity or functional 'warranty' programs from manufacturers that covers material and labor for installed firestopping.

- No Education – Since firestop materials are available 'over the counter' and without restriction, there are situations where this specialized product may be installed by someone who has to 'figure it out in the field'.
- Some Education – Many manufacturers provide short 'box lunch' talks to teach installing workers about their products. \
- ½ Day Programs – A bit longer in length, these programs might provide the worker information about a few products and a few installations.

- 2+ Day Education Programs - Many manufacturers provide a two day introductory course on the industry covering testing standards, code requirements, products and some systems selection. Some manufacturers even have fire test laboratories where demonstration models are built by classes and fire tested.
- Firestop/Containment Worker Apprenticeship Education – There is a 4 year trained journeyman craft worker that exists in the marketplace.
- Third Party DRI's & Companies – Third party certification programs exist for companies who have employees that become a 'Designated Responsible Individual' (DRI) upon successful completion of a firestop industry examination from either FM Approvals or Underwriters Laboratories.

Once the person passes the FM Approvals or UL Firestop Exam with an 80% or better score, they receive a letter from FM or UL stating they passed. The individual certification as a 'DRI' only is awarded once the company has passed a rigorous audit of the company management system and then appoints the person as a 'DRI'.

For the company approval or qualification, there are two audits performed by FM Approvals or UL. The Office and Facility Procedures audit by FM Approvals or UL then proves that the company operates to the parameters established by the management system using office documentation. The second audit, a 'Field Procedures Audit', provides the peace of mind that the management system is actually working.

FCIA offers a tool for FCIA Member and Non Member firms. The FCIA Management System Template is a guide for firestop contractor to get their management system program started. This guide is very comprehensive and must be edited to match the company's management system policies. Join FCIA and get this for free. (www.fcia.org)

Contractor Management Systems must cover some key elements.

- Employee Training & Education
- Systems Selection
- Procedures to Communicate systems to field, AHJ's, building owners, managers, architects, etc.
- Material Controls –How does the company handle defective materials?
- Systems installation "protocol" – Firestop products become 'Systems' if installed to the system. -
- Labeling –Are they numbered sequentially? Are they in a certain order?
- Record keeping - Variance Procedures
- Non-Conformances – All companies have issues in the field. How are they handled?

- Documentation –Without the 'System' documentation, there is no Firestop System.
- Project closeout – At the end of each project, a 'closeout file' of the documentation is given to the hiring authority, the Authority Having Jurisdiction, and on to the building owner and manager at some point as specified in the construction documents. FM 4991 Approved and UL/ULC Qualified Contractors keep this information on file for 7 years.

The advantages of the third party company based accreditation program for contractors is that it is based on criteria developed with the industry by a credible third party; FM Approvals or Underwriters Laboratories/Underwriters Laboratories of Canada.

The purchasing company knows that there is at least one person that has passed the FM or UL Firestop Exam and been appointed a DRI. They know that the company has a management system manual that governs quality at the firm...both verified by a third party, objective entity.

Since there are no educational or other manufacturer or code mandated requirements to purchase material, the FM 4991 Approved Contractor & UL/ULC Qualified Firestop Contractor Programs offer a benchmark level of knowledge that covers all products from many different manufacturers.

Why Hire These FM 4991 Approved or UL Qualified Contractors?

They've been through a very rigorous vetting process including an office and field audit by a third party firm. It also means a benchmark level of consistency and quality has been reached as well.

Where do we find these firms?

The Firestop Contractors International Association partnered with FM Approvals and UL/ULC to build these programs. The contractors who are approved or qualified are listed at www.fcia.org, FM Approval and also under UL Qualification. Also, find them at www.approvalguide.com and www.ul.com.

Why settle for less? Demand that the Firestopping Trade install firestopping products to become firestop systems on your next project. You won't be disappointed. 🔥

Fire Rated Doors and Builders Hardware

By Paul G. Baillargeon, AHC, FDAI

The Door Security & Safety Foundation is pleased to be a part of the Barrier Management Seminar group presenting at the American Society of Healthcare Engineers' regional events.

The Foundation's main mission over the last 7 years has been to promote safe and secure openings that enhance life safety. The Foundation accomplishes this through promoting awareness and education to the building design, code authority, and facility management communities. A primary objective within this mission is to support the annual fire and egress door inspection required by NFPA 80.

It is critical that building owners and managers understand the importance of providing and maintaining the protective barriers in their facilities. The building owners and managers must also be educated as to what components make up the barriers, and how to maintain the barriers over the life of the building.

The fire door assemblies, which are part of the building's fire resistance rated assemblies, play a major role in both providing safe areas of refuge within the building and in allowing the building occupants and rescue personnel time to safely enter and egress the buildings in times of emergency based on the time limits designs.

Fire doors must function properly every time a building occupant moves throughout the building. Fire doors – as with all doors - are subject to a high rate of abuse when located in areas of high frequency usage. It is a continuous struggle for the facility staff to maintain these doors and it may require daily, if not weekly, monitoring to ensure that they are in proper working order.

In the past 6 years, as a surveyor/inspector of fire doors, I have had the opportunity to inspect fire door assemblies in hundreds of hospitals and health care facilities in the Eastern USA. These inspections afforded me a unique insight to the daily challenges encountered by facility managers/engineers and their staff in the maintenance of fire and egress doors.

The Joint Commission, which is the accrediting organization recognized by the Center For Medicare and Medicaid Services (CMS), audits most healthcare facilities for compliance to applicable codes such as NFPA 101, The Life Safety Code. CMS is currently reviewing the version of NFPA 80 that is used in the USA. CMS may adopt the updated 2012 version of NFPA 101 which drastically changes the care and maintenance requirements along with inspection requirements of fire door assemblies in the very near future.

What are the inspection changes required by NFPA 80-2010?

In the previous editions of NFPA 80, prior to 2007, **Chapter 15, Care and Maintenance**, the area that addresses fire doors, the duration of time between fire door inspections is ambiguous. Additionally, it is not clear as to what components of the fire door assembly should be inspected.

In the 2007, 2010 and 2013 edition of NFPA 80, **Chapter 5.2.1, Care and Maintenance, requires annual inspection, of every fire door in new and existing buildings along with a written record of every assembly inspected.** The revised NFPA 80 standards also provide specific instructions as to which components of the fire door assemblies must be inspected.

Adoption of the revised NFPA 80 standard has created a critical need to educate and train personnel who are responsible for installing, and maintaining fire door assemblies.

Who is qualified to perform the fire door assembly inspection?

Inspections are required to be performed by a qualified person who, by possession of a recognized degree, certificate, professional standing, or skill, and who, by knowledge, training, and experience, has demonstrated the ability to deal with the subject matter, the work, or the project.", and is acceptable to the local AHJ.

What are the requirements of NFPA 80 annual fire door assembly inspection?

- Confirm that all the components of the assembly are labeled or listed.
- Confirm that all the components furnished are installed in accordance with manufacturer's instructions and comply with NFPA 80 standard
- Confirm that no field modification on the labeled components have been performed other than what's allowed by NFPA 80.
- Create a written record of each individual door assembly inspected, to be signed and kept for inspection by the AHJ.

What items need to be inspected per NFPA 80?

As a minimum, the following items shall be verified.

- Labels are clearly visible and legible.

- No open holes or breaks exist in surfaces of either the door or frame.
- Glazing, vision light frames, and glazing beads are intact and securely fastened in place, if so equipped.
- The door, frame, hinges, hardware, and no combustible threshold are secured, aligned, and in working order with no visible signs of damage.
- No parts are missing or broken.
- Door clearances do not exceed clearances listed in 4.8.4 or 6.3.1.7.
- The self-closing device is operational; that is, the active door completely closes when operated from the full open position.
- If a coordinator is installed, the inactive leaf closes before the active leaf.
- Latching hardware operates and secures the door when it is in the closed position.
- Auxiliary hardware items that interfere or prohibit operation are not installed on the door or frame.
- No field modifications to the door assembly have been made that void the label.
- Meeting edge protection, gasketing, and edge seals, where required, are inspected to verify their presence and integrity.
- Signage affixed to the door meets the requirements listed in 4.1.4.

- Gasketing
- Thresholds
- Exit Devices
- Door Bottoms
- Door Sweeps
- Astragals
- Magnetic Locks
- Magnetic Hold Opens Signage-
- Door Clearances-Door Operation Latchbolt Engagements
- Electronic Hardware Operation

This is just a partial listing of fire rated components found on fire door assemblies.



Non-compliant door field modification

Old hardware holes in door jambs

DHI Photos



Door latchbolt holdback



Holes in door frame jamb

DHI Photos

What actions should be taken by building owners and managers?

- Obtain education and training on how to inspect, prepare and maintain the fire door assemblies.
- Review or commence ongoing fire door maintenance program.
- Contact local vendors who have qualified fire door assembly inspectors on staff.
- Utilize these FDAI inspectors to review and inspect any current renovation projects containing fire doors.
- Require FDAI inspections on any new projects under construction prior to accepting work.



Rusted through door frame

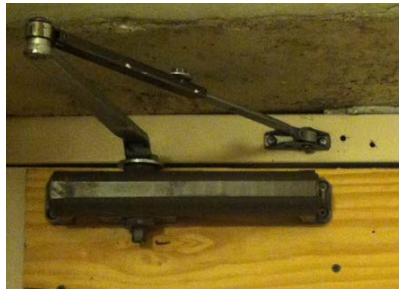
DHI Photo

The following items also require inspection if they are part of the fire rated assembly*

- Door Frames
- Doors Hinges
- Latches
- Closers
- Bolts
- Protection Plates-Mutes
- Glazing
- Glazing Kits

Building Owners and Managers: Question the door and hardware vendors/installers as follows:

- Are the products provided labeled or listed as fire rated products to be used in the fire resistance rated system assembly?
- Are the modifications proposed to the labeled products allowed by NFPA 80 Fire Door and
- Other Protective Openings standards?
- Will the modification void the fire rating of the product and require that the modified product be inspected and recertified by a testing agency?



Non fire-rated hardware application
DHI Photo

Resources for the Building Owner and Facility Managers/Engineers

The Door industry has many resources available for use to help manage fire resistance rated doors in all types of facilities. Visit the **Door Security & Safety Foundation**- www.doorsecuritysafety.org. On this site, the following is found:

- Fire Door Inspection Awareness and Education Training Seminars
- Guideline manuals and resource materials for owners, facility personnel and AHJs.
- Complimentary interactive awareness tutorial available online 24/7

Door and Hardware Institute- www.dhi.org. At the DHI site, there are many resources available.

- Technical education courses on doors and hardware – in person and online
- Fire Door Inspector Training & credential programs.
- Industry's leading resource for certified professionals 🔥

Paul G Baillargeon, AHC, FDAI, is Technical Consultant to the Door Security and Safety Foundation. For more information contact The Door Security & Safety Foundation at info@doorsecuritysafety.org or call 703-222-2655.



Rusted door frames
DHI Photo

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Industry News & Code Corner

NFPA Convention – FCIA’s exhibit at the National Fire Protection Association Convention in Las Vegas was well attended with friends, building officials, fire marshals, healthcare facilities all spending time with FCIA’s Marketing Chair Don Murphy and Membership Chair Jodi Clem.

FCIA’s presentation on Firestopping and Compartmentation Maintenance and Management resulted in a nice round of questions with the audience.



Jim Shannon Retires
NFPA Photo

New NFPA President - NFPA’s new President, Jim Pauley, assumed his new role in July, 2014. His background in codes and standards activities at ANSI, NEMA, NFPA’s Standards Council, government relations at Schneider Electric and passion for building on the base NFPA has already built will keep NFPA strong. Life Safety Digest and FCIA congratulate NFPA on a successful leadership transition.



Jim Pauley, NFPA’s New
President
NFPA Photo

NFPA’s outgoing President, Jim Shannon, gave tribute to NFPA and was declared, the ‘Digital President’. He saluted the organization as a great creator of information, content and expertise through many forms including both paper and internet. Shannon also brought back ‘Advocacy’ to NFPA, according to retired chief engineer, Art Cote.

NFPA 101, Life Safety Code – The Life Safety Code, NFPA 101, assembly in attendance at the Association Technical Meetings in Las Vegas, heard motions and took action. Three amending motions were passed to complete the 2015 code development cycle for NFPA 101.



Of interest to FCIA and the Effective Compartmentation industries was debate on a proposal by the American Society of Healthcare Engineers (ASHE). ASHE’s proposal during the cycle was to expand smoke compartments to 40,000 SF in existing buildings where a sprinkler system was added throughout the building and where an engineering evaluation was performed justifying the trade off. The Amending Motion was disapproved 129 to 121 in a very close vote.

At NFPA, all NFPA Members certified to vote, governmental and industry, participated in the testimony and decision. In addition, **NFPA 99 passed, 197-22** through the voting process as well.



FM Global Top Leadership

Transition – FM Global’s CEO, Shivan Subramaniam, retires at the end of 2014. Thomas Lawson assumes the role of FM Global President and Jonathan Hall becomes Chief Operating Officer.

Fire and Life Safety Award – California Fire Marshal, Tonya L. Hover will be honored with the 2014 Excellence in Fire and Life Safety Award at the Fire-Rescue International 2014 Annual Conference of the International Association of Fire Chiefs (IAFC) in Dallas.

The International Code Council and the Fire & Life Safety Section of IAFC developed the award to honor individuals who have dedicated themselves to saving lives and property through their work in building codes, fire prevention practices, legislative efforts and strong leadership.

Congrats Tonya from Life Safety Digest. Check out previous winners, and more info at <http://media.iccsafe.org/NR/2014/070814-FireSafetyAward.pdf>.

WOBO Celebrates 30

Years - The World Organization of Building Officials (WOBO) is 30! The first meeting of WOBO was held June 3-8, 2014. WOBO this year meets in conjunction with The International Code Council’s Annual Conference in Ft. Lauderdale.



FCIA salutes WOBO and appreciates the relationship we’ve had with Imad Elderubi, WOBO’s President, and our many other friends at the group. Visit www.iccsafe.org for details.

US Construction Growth – The Construction Economy lags the greater economy by at least 18 months. Then, there’s the time from building owner commitment to design to construction.

With the US economy now in it’s 5th year of expansion, it’s about time the construction industry started seeing the results of the recovery, regardless of strength. Conversations with contractors in different trades have shown that backlogs are much greater than the past 4 years.

Nonresidential construction spending expanded in May for the second consecutive month (based on revised data), according to a July 1 release from the U.S. Census Bureau. Nonresidential construction spending rose 1.1 percent on a monthly basis in May and has increased 6.4 percent on a year-over-year basis. Additionally, the American Institute of Architects reports that “After several months of softness, business conditions at architecture firms rebounded in May, with an ABI score of 52.6.” Any score over 50 indicates billings growth.

New Membership Category at FCIA – FCIA’s Board of Directors voted unanimously to allow those Firestop Consultant Members who choose to pay dues at voting member level to vote on association issues.

FCIA’s efforts at ASTM and ICC resulted in ASTM E 2174 and ASTM E 2393 requirements Chapter 17 of the International Building Code. This new move reflects FCIA’s commitment to the proper DIIM for firestopping. What’s DIIM? See the Barrier Management Symposium announcements in this issue of Life Safety Digest.

Barrier Management Symposium – Don’t miss the Sept. 17 & 18 Long Beach, CA Barrier Management Symposium at the Queen Mary. The Symposium educates attendees on how fire and smoke barriers become **SYSTEMS** through the **DIIM** - Proper **Design, Installation, Inspection and Maintenance** - of **Fire Resistance Rated Assemblies; Firestopping, Fire Dampers, Fire Doors, Fire Rated Glazing that provides continuity, and more.** The program, meant for Healthcare Facility Engineers and Staff, Building Officials and Fire Marshals, will fill up fast. Visit www.fcia.org for info.



CSC Celebrates 60 Years

This year marks the 60th anniversary of the Construction Specifications Canada (CSC) serving the construction

industry. CSC has collaborated with the Construction Specifications Institute and other organizations towards creating better construction documents in Canada and beyond. We salute our many friends at CSC on this accomplishment. www.csc-dcc.org



New I-Codes

– ICC announced recently that the 2015 International Family of Codes is available. ICC members get discounts and some free access to documents. According to ICC, Chapter 5 of the IBC has been heavily revised into a new, more user-friendly format. The increases for both height and area when sprinklers

are installed are now integrated into the tables with separate tables used for height and for area.

There was a comprehensive re-working of requirements in the codes for Group I-1 and R-4 (assisted living and group homes) and Group I-2 (hospitals and nursing homes) through the work of the ICC Code Technology Committee (CTC) and the Adhoc Committee on Healthcare. Both Group I-1 and Group I-2 will now have condition 1 and condition 2, based on the type of care, level of care and the occupant’s capability for self-evacuation. In the case of Group I-1, condition 1 denotes facilities where the occupants are capable of evacuation without assistance. Condition 2 occupants require some assistance during evacuation.

A new IBC (and *International Fire Code*) Section 915 replaces and greatly expands upon former Section 908.7 on carbon monoxide (CO) detection and alarm requirements. The relocation of the requirements

provides an independent section within Chapter 9 to address the CO alarm requirements. This relocation also clarifies the requirements with regard to detector and alarm placement. This reworking involved many stakeholders and was coordinated through the ICC Fire Code Action Committee. As part of these revisions, the requirements have also been increased in scope to address Group E educational occupancies, which is consistent with a nationwide trend. Visit www.iccsafe.org for info.



IAS Annual Management

Review - IAS held its annual management review in its Whittier office. An IAS management review meeting is held annually to ensure the resolution of internal audit findings and monitor our continuing adherence to International Standard ISO/IEC 17011 and IAS’ stated policies and objectives. FCIA Member FM 4991 Approved and UL Qualified Contractors, IAS AC 291 Accredited Special Inspection Agencies must demonstrate ongoing continuous improvement of their companies. The Annual Management review is used for that purpose.

“Building Safety Month” a Success – According to the International Code Council (ICC), Building Safety Month news releases are reaching more than 90,000 consumers a week. That means that Building Safety Month may have made more than one-million impressions, raising the profile of code officials and telling the story of the importance of code compliance.

International Code Council Board President Stephen D. Jones, CBO, stated, "Recognizing building officials and design professionals for their commitment to public safety raises the profile of building safety professionals everywhere and helps us realize our goal of creating safe, sustainable, resilient and more affordable communities."

"Addressing resiliency in the built environment and urging all Americans to learn more about how they can contribute to building safety at home and in their communities is what Building Safety Month is all about," said ICC Chief Executive Officer Dominic Sims, CBO.

ICC Announces New Special Inspection

Manual – The new Code Council publication, *Special Inspection Manual: 2012 Edition*, discusses mitigating these issues by practicing specialized oversight and increasing inspection frequency, duration and detail during construction.

According to Ron Lynn, Director/Building and Fire Official for Clark County (Nev.) Department of Building & Fire Prevention Bureau and former ICC Board President, "A well developed special inspection program is one of the most valuable tools a code official can have to assist a jurisdiction. It expands the technical expertise of the organization, and provides expert input and support for code development and adoption."

The *Special Inspection Manual* contains requirements involving special inspection within the

International Building Code, descriptions of required special inspections, and information to create a special inspection program. It supports preparation for special inspection certification exams and aids building departments in creating procedures and forms to run a special inspection overview program.

The content is based on recommended practices and the consensus of building officials, design professionals, and inspection and testing agencies. It outlines the responsibilities of all involved including the special inspector, building official, project owner, engineer or architect of record and contractor. Special Inspection Manual is also helpful for design professionals writing statements of special inspections.

FCIA worked with UL, LLC and also FM Approvals to develop two credible third party Firestop Exams for the purpose verifying the knowledge level of individual inspectors. Additionally, we worked with IAS to develop the IAS AC 291 Accreditation Criteria to meet the requirement that both the inspection company and individual inspector are qualified to inspect firestopping. The FM & UL Firestop Exams are not tied to a membership in an organization. These two exams provide jurisdiction with proof that the individual has a benchmark level of knowledge.

Special Inspection Manual: 2012 Edition is available for purchase at <http://shop.iccsafe.org/special-inspection-manual-2012-edition-1.html>

FCIA Presidents have some Fun – FCIA President Eric Keeton, Past Presidents Don Murphy and Rand Bosscawen attended the Ohio Building Officials Golf Outing July 18. FCIA Board service produces relationships that last. Even though they were on their own dime representing their own companies, they still took time to have some fun together. Interested in FCIA Board Service? Check out www.fcia.org, Board for info.



FCIA Firestop Industry Conference & 15 Year Anniversary Celebration

– With a healthcare focus, don't miss FCIA's Firestop Industry Conference in Naples, FL. The Joint Commission's Anne Guglielmo, ASHE's Jonathan Flannery, FCIA's Code Consultant Bill Koffel, Koffel Associates, Univ. of MN's Andy Streifl on Infection



Control and much more. FCIA's 15th Anniversary Party and Newly formatted Awards Luncheon round out a big Thursday. Plus, the FCIA Program committee has added an 'Open Mike' Session on Friday where firestop and compartmentation issues can be openly stated and discussed. Problems might get solved right away. Check out the Naples Beach and Golf Resort at

www.fcia.org .

ICC 2012 Special Inspection Requirement for Firestopping – FCIA's Standards Committee worked with consultants, manufacturers to build ASTM E 2174 and ASTM E 2393. FCIA's Code Committee was the proponent at ICC to add the Firestop Inspection Standards to the Code. Inspection is required for certain types of buildings. Check out the article about individual and company qualifications in this issue of Life Safety Digest.

FM Approvals & UL Announce Firestop Exams for Firestop Inspectors – As jurisdictions adopt the 2012 International Building Code and build policies for approving inspection agencies and their personnel, they will build criteria for inspectors to meet. For inspection agencies, International Accreditation Services' IAS Accreditation Criteria AC 291 provides jurisdictions with a benchmark level of management quality. FM Approvals and UL, LLC both offer a Firestop Exam that provides a way to measure the person's firestop knowledge. FM & UL Adminster the exams separate from industry associations providing 3rd party independence. Check out www.fcia.org for info about exam locations.

FCIA Symposium Season – Over the past few months, FCIA took the fire resistance rated construction through firestopping program on the road in May and June. We were in the Middle East and Canada.



From Abu Dhabi, UAE to Doha, Qatar and Calgary,



Alberta, Canada, FCIA Member Contractors, Consultants and Manufacturers, Reps, Distributors, Governmental Building Officials, Fire Marshals, Specifiers listened to great speakers, renewed and formed new relationships. Check out the educational material at www.fcia.org/presentations.htm.

DHI CoNEXTions

DHI's Convention in Dallas brought the Door and Hardware Industry together in June. Technical Sessions on Fire and Egress Door Assemblies, Codes and Standards, plus a host of programs by manufacturers and associations provided value to attendees.



PCA Builds Code Advocacy – To more effectively address PCA's renewed emphasis on building codes, William "Jay" Hall, working out of Keysville, Virginia, will represent the cement-based products industry in the codes and standards development process for model building codes and standards writing organizations. Life Safety Digest welcomes Jay back to the industry.

ICC & Gypsum Association Changes – With former Gypsum Association (GA) Executive Director & CEO Michael Gardner moving to the International Code Council (ICC) as Executive Vice President, Compliance Programs, the GA named Stephen Meima, MBA, APR, LEED Green Assoc., as Interim Executive Director. The GA continues advocacy as it has since 1930 through publications, code and standards development. www.gypsum.org.

NIBS Annual Report - The National Institute of Building Sciences presents its *2013 Annual Report to the President of the United States*. Each year, the Institute compiles an Annual Report, which provides an overview of what the Institute's dedicated members, volunteers and staff have accomplished during the past year. Throughout the year, the Institute and its members helped to shape the built environment of America, using a balanced approach to address some of the most intriguing and perplexing problems facing our nation's housing and building community. The 2013 Annual Report is available online at <http://www.nibs.org/?page=reports>.

Building Departments Get IAS Accredited
International Accreditation Services (IAS) provides accreditation to many entities to verify that the organizations 'Do As They Say They Do'. Audits of building department, special inspection agency and other organization management systems are a vital part of third party accreditation. All accreditation programs also have a knowledge element that evaluates staff qualifications as well.

In Canada, Kelowna, British Columbia received accreditation in July. Arlington, VA, Jacksonville, FL, Philadelphia, PA also became accredited building department organizations.

IAS' Accreditation process reviews organizations performance to their management system. The management system includes operational processes, personnel education and training, non conformances and how they are resolved, records, evaluation of the process, and more.

UL Firestop Exam in Chicago – Firestop Special Inspection Agencies, Firestop Contractors, do you want to start the process to get IAS AC 291 Accredited or UL Qualified? FCIA offers a half day education program prior to the UL Firestop Exam Sept. 16. Email linda@fcia.org for info.



ARCOM Celebrates 45 years – ARCOM, the industry standard for master specifications, celebrates 45 years in business this year. Congrats to our friends at ARCOM.

NEW NFCA Website – The National Fireproofing Contractors Association redesigned its website. Check it out at www.nfca-online.org.

NEW NCMA Website - NCMA's newly designed website features content focused on the association's role to advance, protect and promote its members' products. The fresh look of the site highlights the association's many programs and services, including education, promotion, research, and advocacy to ensure that manufactured concrete masonry and hardscape products are building materials of choice in the construction industry. Visit NCMA at www.ncma.org. 🔥

Life Safety Digest 2014 Industry Calendar

August 3 to 6

ASHE Annual Conference and Technical Exhibition
Chicago, IL
www.ashe.org

September 8 to 12

CONSTRUCT2014
Baltimore, MD
www.constructshow.com

September 13 to 16

TIAC Annual Conference
Victoria, BC
www.tiac.ca

September 26 to 27

IIDEX Canada
Toronto, ON
www.iidexcanada.com

September 28 to October 7

ICC Annual Business Meeting, Expo and Public Comment Hearings
Ft. Lauderdale, FL

October 5 to 8

ASTM E06 Meetings
New Orleans, LA
www.astm.org

October 21 to 22

CHES Canadian Healthcare Construction Course
Toronto, ON
<http://www.ches.org>

November 4 to 8

FCIA Firestop Industry Conference & Trade Show
www.fcia.org

December 3 to 5

CONSTRUCT Canada
Toronto, ON
www.constructcanada.com

January 12 to 15, 2015

The National Institute of Building Sciences Conference and Expo
Washington, D.C.
<http://www.nibs.org/?page=conference2015>



2014 ICC Annual Conference
Group C Public Comment
Hearings and Expo

September 28 – October 5



Help Shape the Future of Sustainable Construction

Plan now to attend the **International Code Council (ICC) 2014 Annual Conference, Group C Public Comment Hearings and Expo**, September 28 — October 5 in Fort Lauderdale.

- **Your sustainability expertise and opinions count** — Join us to help finalize code changes to the 2015 *International Green Construction Code (IgCC)*, by participating in the Group C Public Comment Hearings.

Top-Notch Seminars — Nonstop Networking — Distinguished Keynote Speakers

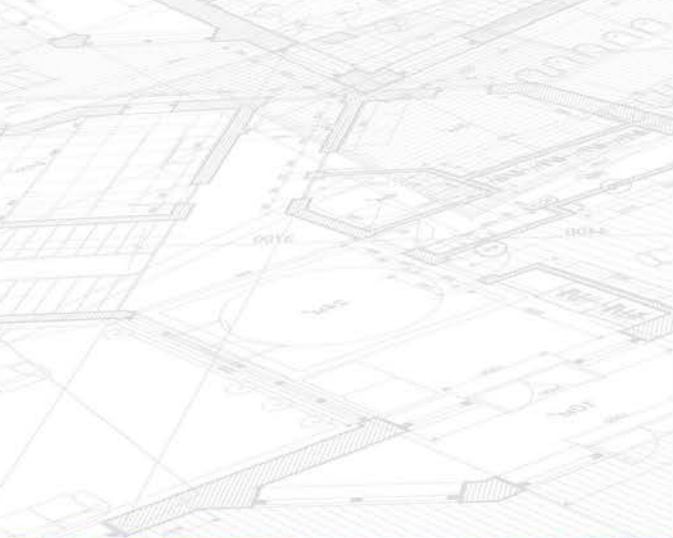
No other building safety code conference offers more exclusive *I-Code* resources, tools and educational opportunities under one roof than ICC's Annual Conference.

- **Gain up-to-date Code Knowledge** — Increase your understanding of the *I-Codes* while learning and earning CEUs and LUs through in-depth educational sessions.
- **Talk shop with peers** — Meet and network with building industry professionals from around the world. You'll have plenty of opportunities to learn, share and make valuable contacts.
- **Get the answers you need at the Expo** — Visit the Expo to see new products and talk directly with leading vendors and manufacturers. You'll get the answers you need from the pros who know.

Expo — Hospitality events — Early-Bird Discount (Register by Aug. 15 and Save!)

Register now at www.iccsafe.org/pch2

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