

THE MAGAZINE OF EFFECTIVE COMPARTMENTATION

Life Safety

DIGEST

SPRING 2016

High-Rise Combustible Construction

Code Development 101
Using ICC's cdpACCESS™

Fire-Resistance-Rated &
Smoke-Resistance-Rated
Systems & Fire Code
Maintenance Requirements

ANSI UL 1479, Part 3
Materials, Concrete Floors and Walls

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COVER STORY

20 High-Rise Combustible Construction—A Short Study

This article addresses a movement in the USA towards permitting combustible wood construction as an alternative to traditional non-combustible concrete and steel, to be used in mid-rise, and even high-rise, buildings.

FEATURES:

6 CODE DEVELOPMENT 101

Using ICC's cdpACCESS™
By Rob Neale & David Karmol

10 FIRE-RESISTANCE-RATED & SMOKE-RESISTANCE-RATED SYSTEMS & FIRE CODE MAINTENANCE REQUIREMENTS

By Bill McHugh & Gary Hamilton

16 ANSI UL 1479, PART 3

Materials, Concrete Floors and Walls

27 KNOW WHEN TO SAY WHEN

Friends Don't Let Friends Overfill Sleeves
By John Zalepka

29 PLAN, PROVIDE, TRAIN

OSHA Safety Stand-Down May 2-6, 2016

32 AT 86, PETER HENSLEY STILL INSPIRES

By Lester Hensley

DEPARTMENTS:

4 EDITOR'S MESSAGE

34 BRIGHT IDEAS

38 CODE CORNER

41 INDUSTRY NEWS

46 INDUSTRY CALENDAR



WRONG!



EDITOR'S MESSAGE

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LIFE SAFETY DIGEST

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ON THE COVER:

Project in progress, Anaheim California. Photo courtesy of William J. (Jay) Hall, Manager, Codes, for the Portland Cement Association

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Ten years ago, FCIA's 2005 Board of Directors met on a cold and windy day in Chicago to develop initiatives to get involved in firestopping and effective compartmentation in a big way. The result? Code proposals, standards ballots, the Total Fire Protection Systems and Barrier Management Symposiums and the 'DIIM' philosophy (proper Design, Installation, Inspection and Maintenance of Firestopping) . . . plus, the birth of *Life Safety Digest*.

That's right, 2016 marks the 10th Anniversary of *Life Safety Digest*!

Fast forward 10 years and a lot has happened. Special inspection for firestopping is required where 2012 and 2015 International Building Code is adopted. FM 4991 Approved and UL Qualified Firestop Contractors are widely used worldwide for high-rise, healthcare and education occupancies. FCIA is involved in code development at both the International Code Council and National Fire Protection Association, standards development at both ASTM, FM and UL, and has been very active in the industry speaking about the 'DIIM' to architects, specifiers, code officials and healthcare professionals.

Life Safety Digest is a big part of our strategy to educate about the importance of the 'DIIM' for firestopping and effective compartmentation. It spawned the Barrier Management Symposiums which have made a tangible difference reducing the barrier violations found by The Joint Commission during audits of healthcare facilities. It has been called, 'the technical journal for information on fire-resistance rated construction'.

To commemorate this exciting milestone, we're unveiling our new look with this issue of *Life Safety Digest*. Not only has the content been given a fresh, vibrant facelift, but we're also proud to announce a new feature section, Bright Ideas, highlighting new developments in the industry. We can't think of a better way to celebrate! (Want to look back? Check out all the issues of *Life Safety Digest* archived at www.FCIA.org.)

We're excited about all of our changes, and are looking forward to everything to come. We hope you've enjoyed the past 10 years reading *Life Safety Digest* as much as we have enjoyed writing and publishing the journal. 🔥

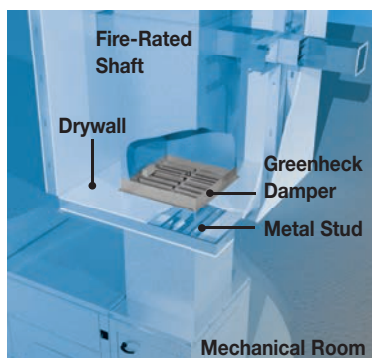


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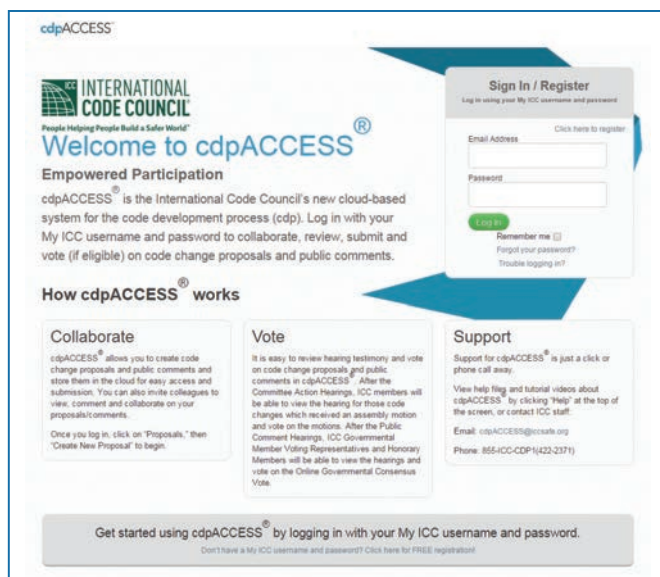
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CODE DEVELOPEMENT 101

Using ICC's cdpACCESS™



The cdpACCESS opening screen. Here, you can create your account at the bottom of the page, then sign in to begin working.

So, you've got the one idea that will make the building code easier to understand, the fire code simpler to interpret, and the project owner's bottom line to stay in the black. Now, how do you get it into the code?

With *cdpACCESS*, the International Code Council's (ICC) online tool for code development, submitting code change proposals is only a few computer clicks away. Anyone with an interest in improving the model codes is welcome to send their suggestions to the code development process through this robust cloud-based tracking, collaboration and voting system found at www.cdpACCESS.com.

cdpACCESS saves time and money while providing a single portal for code officials and other interested persons to stay on top of proposed code changes, offer their commentary and—for code officials—determine the outcome by their votes.

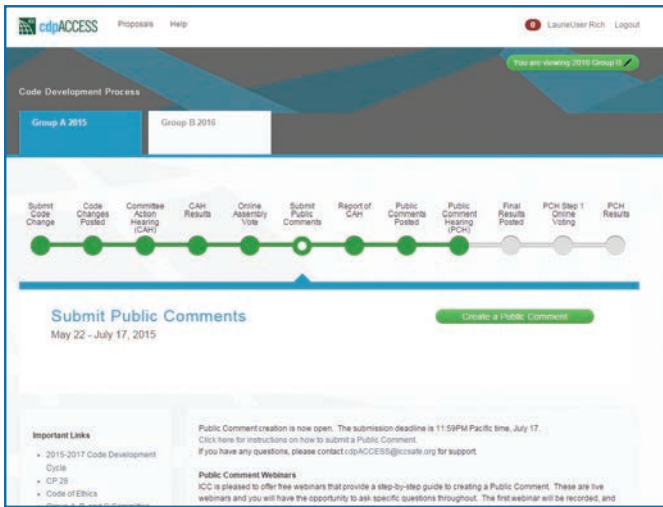
The concept of online participation in ICC's Code Development Process dates back to 2001 when off-site voting on code changes was used by the three model code organizations that later consolidated to become ICC.

The development of codes and standards in the United States affects all Americans, as they live, work and go to school in buildings designed to comply with building codes, and use thousands of products, from Apple I-phones to Ziploc bags that meet consensus standards, and in most cases meet many different standards, largely developed by a few hundred private sector, non-profit organizations. Americans sometimes focus on government requirements, but are not often aware of the many private sector standards that are either voluntarily adopted by architects, designers and manufacturers, or adopted as regulations by Federal, state and local governments.

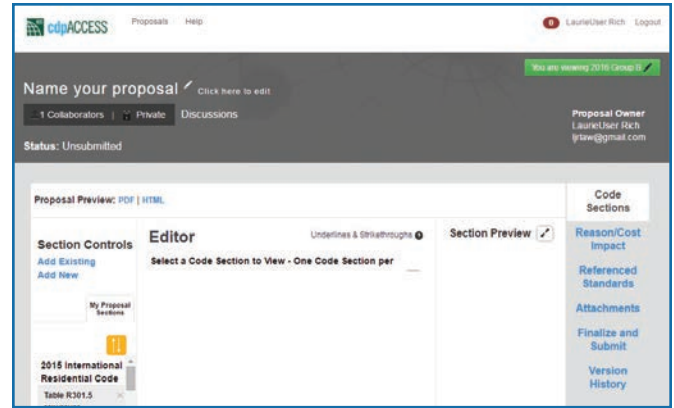
THE CODES

Most of the jurisdictions in the United States that adopt and enforce building codes and standards use one or more of the International Codes. Other jurisdictions that use the International Codes include Abu Dhabi in the United Arab Emirates, Guam, Northern Marianas Islands, the U.S. Virgin Islands and Puerto Rico. The ICC is a U.S.-based, not for profit, 58,000-member association of professionals and volunteers who are responsible for the development, publication and enforcement of model consensus codes for building and fire safety, including the *International Building Code*® (IBC) and *International Fire Code*® (IFC). The IBC is in use or adopted in all 50 states; the IFC is in use or adopted in 42 states; while the *International Residential Code* (IRC) is in use or adopted in 49 states, the District of Columbia, Guam, Puerto Rico and the U.S. Virgin Islands. ICC offers free, read-only access to all its current codes at <http://codes.iccsafe.org/I-Codes.html>.

In addition to publishing these codes, ICC offers its members a variety of important services: code training and education, plan review and code interpretations, technical opinions, inspector certification and agency accreditation, product evaluation and a range of other products. As code enforcement professionals, ICC Members are encouraged to suggest code changes and vote on them for adoption as model legislation. (See sidebar "Step-by-Step for *cdpACCESS*" for instructions.)



Once you have logged on to cdpACCESS, you can look at the progress of any Group A or B code proposal. The green progress line shows you where ICC is in the code development process for that cycle.



This page enables you to submit your code change proposals. Drop-down menus guide you to the appropriate code section.

ROBUST AND MODERN FEATURES

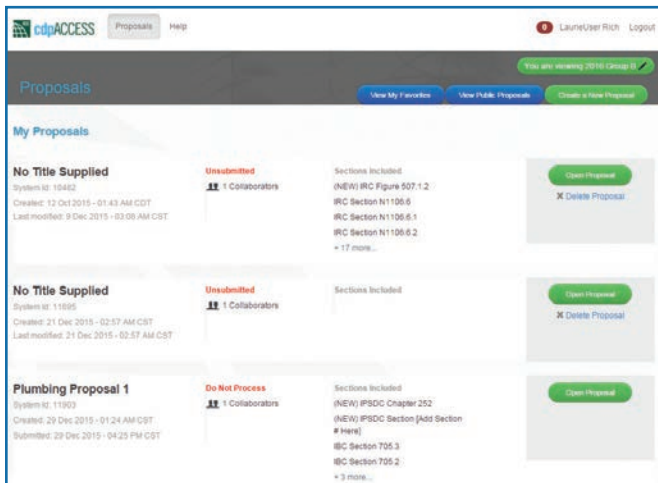
cdpACCESS is intended to make the entire code development process open and transparent to all participants, as well as any person or entity that may be affected by the codes. The portal includes features that allow users to share information and opinions, as well as watch videos of comments made at the various code development hearings. cdpACCESS allows anyone to participate in code development from a computer or tablet when you are unable to attend in person. This capability alone will save thousands of dollars in travel and lodging expense for those who want to be active in the code hearings. Most important, it makes the entire code process more democratic.

Among the features offered on the cdpACCESS portal are:

- The ability for online collaboration with one or many colleagues;
- The capacity to view, download and print the Code Change Agenda;
- The opportunity for online users to submit floor modifications at the Committee Action Hearings*;
- The capability to vote online for assembly floor motions following the Committee Action Hearing. All ICC Members are eligible to vote online on assembly floor motions;
- The capacity to view, download and print the Report of the Committee Action Hearing;
- The ability to create and submit online public comments to the Committee Action Hearing results;
- The capability to view, download and print the Public Comment Agenda; and
- The ability for ICC Governmental Member Voting Representatives and Honorary Members to vote online on proposed code changes/public comments following the Public Comment Hearing.

PREPPING AND TESTING cdpACCESS

Since not everyone is an expert in a digital world, cdpACCESS developers have made the tool "user-friendly." With a few simple steps, anyone with access



Review all code change proposals, the code sections where they are proposed, who the proponent is, and then offer your comments.

ICC Members and others with an interest in public safety in the built environment have begun to use the first version of cdpACCESS—the new, cloud-based tool built exclusively for ICC’s code development process (cdp). Once referred to as remote voting, cdpACCESS is much more than that. With cdpACCESS, you can create code change proposals and submit them online. According to professional engineer and certified plumbing designer Julius Ballanco, a regular columnist in *PME Engineer* magazine, “cdpACCESS maintains the high level of integrity ICC’s code development process is known for and is expected to increase participation.”¹

“The ultimate goal is to provide a superior way to develop codes and increase participation in code development,” said ICC CEO Dominic Sims, CBO. “We are confident that code development participants and public safety will benefit from cdpACCESS.”²

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to the World Wide Web can submit code development proposals for consideration. ICC has tested *cdpACCESS* extensively on a wide variety of Windows and Apple computers and the iPad. The *portal* is designed for use on Internet Explorer, Firefox, Safari and Chrome. Internet Explorer version 7 and earlier versions are not supported. Analysis of ICC website traffic has shown this will affect a very small percentage of users.

Support for *cdpACCESS* includes help by phone and email to answer questions, receive comments and suggestions and report any system errors. The toll-free *cdpACCESS* hotline is 855-ICC-CDP-1 (422-2371); email can be sent to cdpACCESS@iccsafe.org. Detailed *cdpACCESS* instructions and a schedule of upcoming webinars can be viewed at www.iccsafe.org/cdpaccess/.

SUMMARY

The International Code Council (ICC) has long been a leader in developing its codes and standards in a transparent and open process, exceeding even the strict “openness” criteria required by the American National Standards Institute. Going beyond the requirement to not impose “undue financial barriers” to participation, ICC has long allowed any individual with an interest to participate in public hearings on code change proposals, and even to vote on issues submitted to the assembly, without payment of any registration fee or participation charge. Providing this access, which is subsidized by the membership and the product sales of the Code Council, has long been a hallmark of the ICC process, and has been a factor in the wide acceptance and adoption of its codes and standards by government entities at every level, and around the world. 🔥

ENDNOTES

- * The next ICC Committee Action Hearings are scheduled April 17-27, 2016, at the Louisville International Convention Center in Kentucky. Learn more and register at http://media.iccsafe.org/2016-MarComm/2016_CAH/index.html.
- 1. Ballanco P.E. CPD, Julias (2015, June 15). ICC’s website enhances the evolution of codes. *PME Engineer*, retrieved January 22, 2016 from <http://media.iccsafe.org/news/icc-enews/2015v12n25/jump-ballanco.html>
- 2. *Ibid.*

Rob currently serves as the International Code Council Vice President for Government Relations: National Fire Service Activities. He is responsible for strategic guidance to help local fire organizations adopt and enforce the most recent version of the model codes based on technical merit and build relationships among code enforcement entities. Previously, he has served as Deputy Superintendent for the United States Fire Administration National Fire Academy, as well as managed the National Fire Academy’s Technical Fire Prevention curriculum. Rob has more than 30 years of experience in Washington state municipal fire protection as a fire chief, fire marshal and fire fighter. He served as charter member of the National Fire Protection Association Technical Committee No. 1037 for “Professional Qualifications for Fire Marshal,” and represents the International Code Council on the Underwriters Laboratories Fire Council. He also sits on the Vision 20/20 Steering Committee. Rob has been published regularly in national fire protection trade journals, and for many years has served as content developer and platform instructor on codes, standards and fire protection systems to national, regional and local audiences. Rob can be reached at 202.440.3244 and rneale@ICCsafe.org.

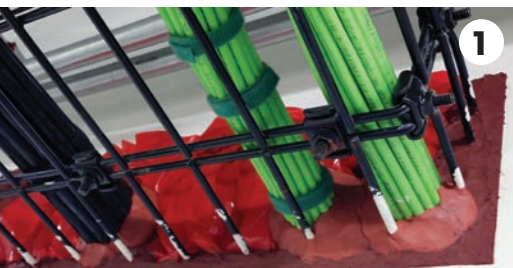
David Karmol is currently a consultant to the International Code Council dealing with Federal regulatory affairs. He previously was Vice President for Federal Affairs, with responsibility for managing the Council’s relationships with Congress, Federal agencies and outside organizations. Prior to joining the Code Council, Mr. Karmol was the U.S. Department of Commerce Standards Advisor to Iraq, stationed at U.S. Embassy Baghdad, detailed by the National Institute of Standards and Technology (NIST). He previously served as Vice President, Public Policy and Government Affairs at the American National Standards Institute (ANSI) and has been appointed to positions in the federal government, both in the Congress and in the Executive Branch. Mr. Karmol is an attorney, licensed to practice law in Ohio, Virginia and the District of Columbia. David can be reached at 202.641.2308 or dkarmol@iccsafe.org.

STEP-BY-STEP TO CDPACCESS

Using *cdpACCESS* is easy, even for the first timer. Here are the steps to get you started in writing code change proposals:

1. In your web browser, select www.iccsafe.org.
2. Once the ICC home page loads, click on “*cdpACCESS*” in the black banner at the upper right hand side of the screen.
3. You will be directed to the “Welcome to *cdpACCESS*” portal where—if you are not already registered—you will need to register a username and password at the hyperlink at the bottom of the page. It’s free.
4. Once you are registered, select the green Log In button on the “Welcome to *cdpACCESS*” portal.
5. That’s all there is to it . . . you’re now in and able to participate in the ICC code development process. Welcome.
6. Use *cdpACCESS* to participate in the Committee Action Hearings April XX-XX, Louisville, KY. Not only can you see what the results are, you can watch the action too! ICC Streams the hearings live. Visit www.iccsafe.org during the hearings and watch code development happen live.

FIRE-RESISTANCE-RATED & SMOKE-RESISTANCE-RATED SYSTEMS & FIRE CODE MAINTENANCE REQUIREMENTS



RIGHT!



WRONG!



RIGHT!

Total Fire Protection consists of several components. Detection and alarm systems alert building occupants to do something. In our office, that's immediately. Suppressions systems exist that hold the fire in check until the fire is extinguished, either by the sprinkler or fire service. Egress systems are designed to be obvious and intuitive, thereby providing a pathway out of the building if needed.

Detection and alarm systems come with maintenance manuals. Some components of the sprinkler system come with documentation, or there are standards that mandate maintenance at certain intervals.

Effective Compartmentation and structural fire-resistance-rated and smoke resistant assemblies are critical defenders for occupants in buildings. They too, have maintenance requirements.

It makes sense, then, that egress systems need to be maintained too. The egress system has code mandated conditions that must be maintained to maintain clear,

unobstructed, continuously safe, fire-resistance-rated and smoke-resistant pathways to safety.

The International Fire Code, in 703.1, Maintenance, gives general guidance about how to maintain fire-resistance-rated and smoke-resistant assemblies. The very short section for fire-resistance is very telling. It instructs very clearly that fire-resistance is critical to building safety and needs to be maintained.

In the paragraphs below, there is a review by paragraph of what is required:

**International Fire Code, SECTION 703
FIRE-RESISTANCE-RATED CONSTRUCTION**

703.1 Maintenance. The required *fire-resistance* rating of fire-resistance-rated construction, including, but not limited to walls, firestops, shaft enclosures, partitions, smoke barriers, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistant joint systems, shall be maintained.

Photos 2, 4, 5, 6, & 7 Specialty Firestop Solutions, Inc., Photo 1 Apex Firestop photo, Photo 3 FCIA photo.

FCIA Note: This ‘charging language’, sets the stage for fire-resistance-rated and smoke-resistant construction over the buildings’ lifetime. It states simply, “the fire-resistance rating . . . shall be maintained”. That does not mean that fire-rated barriers can be breached, opened or penetrated, and then maybe restoring the fire-resistance-rating to the assembly with a firestop system, fire door, fire damper or joint assembly. It means maintain the fire-resistance.

Such elements shall be visually inspected by the owner annually and properly repaired, restored or replaced where damaged, altered, breached or penetrated.

FCIA Note: This sentence sets up the requirements for the building owner and manager to review fire-resistance-rated systems and smoke-resistant assemblies. It states at a minimum, that a visual inspection is required annually. This can be done by the building owner or subcontracted out to a specialist company in the fire-resistance or smoke-resistant construction field. Note that there is an “and” connecting actions in the sentence. This can be interpreted that any breaches discovered need to be “repaired, restored or replaced”.

Openings made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer openings and holes made for any reason shall be protected with approved methods capable of resisting the passage of smoke and fire.

FCIA Note: The 2015 International Building Code has a definition for “Approved”.

[A] APPROVED. Acceptable to the building official.

The 2015 International Fire Code has a corresponding definition as well.

[A] APPROVED. Acceptable to the fire code official.

The keypoint is that there is an approved method required.

The Approved method must be acceptable to the Fire Code Official. In the Building Code are listed the Approved Methods for restoring fire-resistance to assemblies that have had breaches due to penetrations like pipes, ducts, cables and openings like doors, dampers and joints.

The Approved Methods reference products that have been tested and listed to standards specific to each penetration, joint or opening. Test standards determine the suitability for use of the products in specific



4

WRONG!



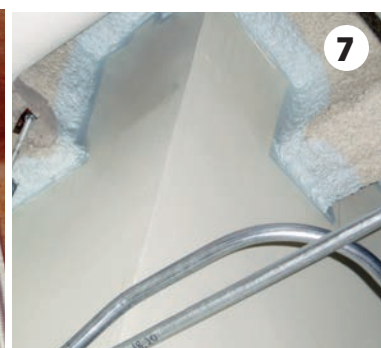
5

RIGHT!



6

WRONG!



7

RIGHT!

Records of inspections and repairs shall be maintained.

FCIA Note: In this short sentence, a very important direction is given. “Records shall be maintained.” It is critical for building owners and managers to maintain key documents such as records of inspections.

First, the Life Safety Drawings are needed to understand where the fire-resistance-rated assemblies are located. Without this document, there is no way to know what to maintain. FCIA has a code proposal in to require these important drawings during this code development cycle. Check out the sidebar on page 14 of this issue, for the exact language.

Second, the barrier and breaches in the barriers by penetrations including pipes, cables, ducts and openings, etc., need to be documented. A Barrier Management System is needed to track the fire-resistance-rated construction inspections. Look for more on these Barrier Management Systems in the next issue of Life Safety Digest.

Where concealed, such elements shall not be required to be visually inspected by the owner unless the concealed space is accessible by the removal or movement of a panel, access door, ceiling tile or similar movable entry to the space.

fire-resistance-rated or smoke-resistant assemblies. These standards are referenced in the International Building Code. In existing buildings built before firestopping was prevalent, there may be generic materials used to protect breaches. Some may be suitable for use while others blow out in short order when exposed to fire. If a building owner and manager has access to breaches where products not suited to maintain the fire-resistance-rating of the construction were used, they should start a barrier remediation program to build safe assemblies for building occupants, in FCIA’s opinion.

Openings through fire-resistance-rated assemblies shall be protected by self- or automatic-closing doors of approved construction meeting the fire protection requirements for the assembly.

FCIA Note: Openings are referred to in the building codes as fire-rated doors and fire dampers. A joint system might also be considered an opening. The important reference in this paragraph is the clarification of the ‘approved’ construction for the doors, meaning acceptable to the fire code official. The second part of the sentence discusses the fire-resistance requirements. It states that the approved construction has to meet the fire

protection requirements for the assembly. This would be stated in the building code requirements that the building was permitted under.

FCIA's Firestop Manual of Practice (MOP) has a chapter on Effective Compartmentation Maintenance. FCIA's Standards and Technical Committee are reviewing the MOP Chapter on Maintenance and Management of fire-resistance-rated construction to provide further guidance to Contractors, Special Inspection Agencies and Building Owners and Managers. Most important, FCIA's current documents in the MOP urge that the most appropriate way to maintain fire-resistance and smoke-resistant properties is to refer to the tested and listed firestop systems, manufactures installation instructions—product data sheets and Safety Data Sheets for documentation. Then, when firestops are damaged, look for repair methods as stated on these product data sheets to get the repairs right. **Every product's chemistry is different.** Each manufacturer needs to state how to maintain their products right after, as well as many years after, installation.

NFPA 101

A review of the Maintenance requirements for fire-resistance has to cover both the International Fire Code (IFC) and NFPA 101 Fire Codes. Why? In certain jurisdictions in the USA, Canada, the Middle East and Asia, NFPA 101 is the Fire Code used that covers building maintenance. Both the IFC and NFPA 101 have requirements that state the fire-resistance of the walls and floors needs to be maintained continuously and repaired when damaged.

Now for a question that you might be thinking . . . is there a "Maintenance Manual" required that might have been provided by the manufacturer of each fire-resistance-rated and smoke-resistant construction system? Neither has an 'Operation and Maintenance Manual' required; however, both codes ask that maintenance be done. They do have a requirement for documentation though, as previously discussed.

NFPA 101's 2012 Edition provides guidance on maintenance as well. An analysis is below. The bolded print is for emphasis, from LSD:

NFPA 101, 2012

SECTION 4.5.8 Maintenance, Inspection, and Testing.

4.5.8.1 Whenever or wherever any device, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or any other feature **is required for compliance** with the provisions of this Code, **such device**, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or other feature **shall thereafter be continuously maintained** in accordance with applicable NFPA requirements or requirements developed as part of a performance-based design, or as directed by the AHJ. [101:4.6.12.1]

FCIA Note: Note the "shall be thereafter be continuously maintained in accordance with the applicable NFPA requirements . . ." This is a major charging statement. Continuous maintenance could mean breach an assembly, fix it now. The Authority Having Jurisdiction, (AHJ) could cite this section for violations found in buildings.

Why? Breaches in fire-resistance-rated and smoke-resistant assemblies are safety hazards. If alarms are broken, they are fixed quickly. If the fire pump is out of service, it's fixed promptly. Fire-resistance should be no different. Breaches of the fire-resistance-rated barriers that are not protected means fire and smoke can travel quickly in buildings, causing egress systems to become impassable.

4.5.8.2 No existing life safety feature shall be removed or reduced where such feature is a requirement for new construction. [101:4.6.12.2]

FCIA Note: Here, the NFPA 101 is communicating clearly to the building owner and manager that the features of fire-resistance-rated and smoke-resistant assemblies need to be maintained.

4.5.8.3 Existing life safety features obvious to the public, if not required by the Code, shall be either maintained or removed. [101:4.6.12.3]

FCIA Note: In buildings, things change from time to time. Walls are moved and with that, fire-resistance-rated assemblies changed as well. If a re-engineering of the compartmentation takes place due to changes, yet the firestops, fire dampers and fire doors, are still in place, they need to be maintained.

4.5.8.4 Any device, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or any other feature **requiring periodic testing, inspection, or operation** to ensure its maintenance **shall be tested, inspected, or operated** as specified elsewhere in this Code or as directed by the AHJ. [101:4.6.12.4]

FCIA Note: The NFPA 101 is clear again that anything requiring maintenance, periodic testing, etc., needs to be done at specified intervals in the code. And, it adds one more caveat: if the AHJ wants a test, it can be required. This is another reason to maintain fire-resistance continuously rather than only in an emergency.

4.5.8.5 Maintenance, inspection, and testing shall be performed under the supervision of a responsible person who shall ensure that testing, inspection, and maintenance **are made at specified intervals** in accordance with applicable NFPA standards or as directed by the AHJ. [101:4.6.12.5]

FCIA Note: In this section, the NFPA 101 is communicating that a "Responsible Person" needs to supervise the "maintenance, testing and inspection". What constitutes a responsible person? The code does not say what this is. Options are those companies that have accreditations such as FM 4991 Approval, UL Qualification or IAS AC 291. These companies then have to employ people who have shown competency in the field to inspect such fire-resistance-rated or smoke-resistant assemblies. Individuals who have passed the FM or UL Firestop Exam, DHI's Fire Door Inspector Assembly Program or other exams show competency as individuals and may be deemed as a responsible person.

OPERATION AND MAINTENANCE MANUALS FOR FIRE RESISTANCE & BARRIER MANAGEMENT SYSTEMS

Many documents may assist building owner and managers in maintaining effective compartmentation and firestop systems once installed to the tested and listed system.

Some manufacturers publish maintenance instructions for the products on their product data sheets. These documents from each individual manufacturer of the fire-resistance-rated and smoke-resistant assembly components provide the unique requirements to maintain each product over the life-cycle of the structure.

Barrier Management Systems can help the Building Owner and Manager handle the complex systems that make a building's fire-resistance-rated and smoke-resistant compartmentation work. There are several methods used to track barriers and the many breaches from doors, dampers and cables, ducts, pipes and joints in buildings.

PAPER, BARRIER SYSTEMS OR SPREADSHEETS?


The Barrier Management Systems options are outside the scope of this article. Look for the next issue of *Life Safety Digest* to cover Barrier Management Systems in all types of buildings.

CONCLUSIONS

The Fire Codes have been written for a reason. The International Fire Code is being reviewed this year with proposals that address many of the issues stated above.

The continuous maintenance of fire-resistance-rated construction assemblies is critical to fire- and life- safety in buildings. If a sprinkler system goes down, there is risk. If the fire-resistance-rated and smoke-resistant construction compartmentation system is not maintained, the egress path in buildings with and without sprinklers gets compromised, reducing safety to occupants.

Building Owners and Managers should really take a close look at their fire-resistance-rated and smoke-resistant construction assemblies to see if the systems are continuous and not breached. Do the doors close and latch? Do the fire dampers work? Do the fire walls, fire barriers, fire partitions, smoke barriers, smoke partitions have breaches or holes in the them? Are there open gaps at the joins, the top of the wall or the perimeter where fire can spread?

Even the smallest hole in a wall can cause the fast spread of fire. 

Bill McHugh is Executive Director of the Firestop Contractors International Association, a trade group dedicated to fire and life safety through the proper Design, Installation, Inspection, Maintenance and Management of Effective Compartmentation and Firestopping. He can be reached at bill@fcia.org.

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FCIA CODE PROPOSAL—INTERNATIONAL FIRE CODE 703.1 FINAL AMENDED

The Firestop Contractors International Association reviewed the International Fire Code, 703.1 section on penetrations and joints and has provided a code development proposal to the International Code Council through its cdpACCESS program. The Fire Code sets the minimum requirements for maintaining and managing fire-resistance-rated and smoke-resistant fire walls, fire barriers, smoke barriers and smoke partitions, as well as structural steel fire protection with SFRM or IFRM Fireproofing in buildings.

703.1 MAINTENANCE.

703.1 Maintaining protection. Smoke-resistant construction and the required fire-resistance-rating of fire-resistance-rated construction, including, but not limited to, walls, through penetration and membrane penetration firestops systems, shaft enclosures, partitions, smoke barriers, smoke partitions, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistant joint systems, shall be maintained.

FCIA Note: What this paragraph does is add the concept of smoke-resistant construction elements to the International Fire Code, Chapter 7. Since the Chapter is named 'Fire and Smoke Protection Features', and smoke barriers and smoke partitions are managed in this section, it makes sense that the terms smoke-resistant construction be added.

703.1.1 Inspection. Such Fire-resistance-rated construction and smoke-resistant construction elements shall be visually inspected by the owner annually. The inspection shall verify that the continuity and integrity of such elements is maintained by approved methods. Where damaged, altered, breached, or penetrated by other than approved methods, the element shall be properly repaired, restored or replaced. Records of inspections and repairs shall be maintained. Where concealed, such elements shall not be required to be visually inspected by the owner unless the concealed space is accessible by the removal or movement of a panel, access door, ceiling tile or similar movable entry to the space.

FCIA Note: In this section, the change is that the inspection scope is to verify continuity of the fire-resistance through breaches in the assemblies made for pipes, conduits and other penetrating items.

703.1.2 Records of inspections and repairs shall be maintained by the owner and shall be available to the code official upon request. Such records shall be maintained for the life of the installation.

703.1.2.1 Records information. Records shall include a copy of drawings indicating the location of fire-resistance-rated construction and smoke-resistant construction elements and an inspection report indicating a thorough review of all elements required to be inspected in accordance with 703.1.

FCIA Note: This section makes it clear that fire-resistance and smoke-resistant assembly documentation is required including the life-safety drawings. Why? Without documentation, how does the building owner and manager know what to maintain to keep the building safe?

703.1.2.2 Repair records information. Where repairs are made with listed systems, the system listing and manufacturer's installation instructions shall be provided to and maintained by the owner.

FCIA Note: In the repair section, it is imperative that the system listings and manufacturers' installation instructions be part of the documentation kept by the building owner and manager.

703.1.3 Repairs. Openings and breaches for penetrations, joints made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer openings and holes made for any reason shall be protected with approved methods capable of resisting the passage of smoke and fire. Openings through fire-resistance-rated assemblies shall be protected by self- or automatic closing doors of approved construction meeting the fire protection requirements for the assembly.

703.1.4 Unprotected Penetrations. All unprotected penetrations in fire-resistance-rated construction and smoke-resistant construction shall be protected with approved methods capable of resisting the passage of smoke and fire as permitted by the International Building Code.

703.1.5.1 Fireblocking and draftstopping. Required fireblocking and draftstopping in combustibile concealed spaces shall be maintained to provide continuity and integrity of the construction.

FCIA Note: This text was deleted. We understand that doors and dampers have another code proposal from the ICC Fire Code Action Committee which will cover doors. FCIA also has not submitted any changes in the fireblocking and draft stopping.

While the current fire code for fire-resistance is quite good, there are things missing from it. Smoke-resistance, a key component, is missing. FCIA believes this code development proposal provides clear direction to the building owner and manager who is charged with maintaining fire-resistance and smoke-resistant properties to the assemblies. 🔥

Sidebar written by Bill McHugh and Don Murphy. Don Murphy is Vice Chair of FCIA's Code Committee and President of PPMI Firestop, Inc, in Indianapolis, Indiana. Don can be reached at don@ppmifirestop.com.

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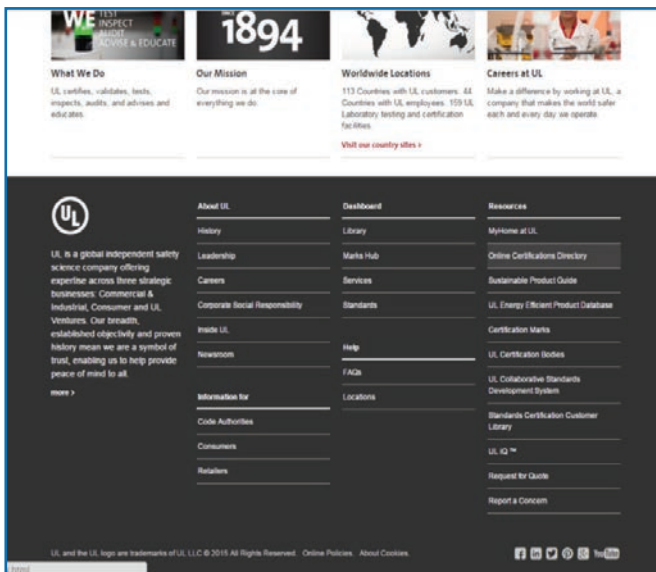
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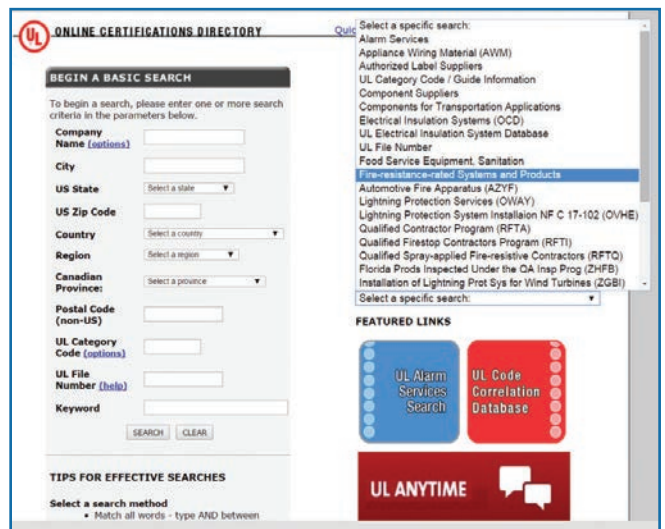
Materials, Concrete Floors and Walls

FCIA NOTE: This is part III of the series on the UL Guide Information. The UL Guide Information is at the front of each section of listings for fire-resistance-rated and smoke-resistant products. These products do not become fire-resistance-rated until they are installed to the tested and listed system and manufacturers' installation instructions.

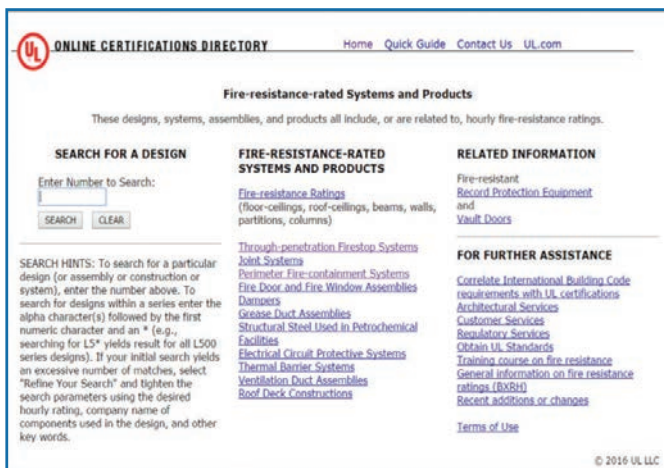
To see the first and second part of the series, visit www.FCIA.org, Life Safety Digest. This is a series of articles from the UL Guide Information for Firestop Systems. This article is focused on fire-resistance continuity when there are Penetrating Items provided and put through the assembly.



At the bottom of the UL.com home page is a black area. Click on Online Certifications Directory to get to the fire-resistance listings. UL.com image



This page results from the initial click from the home page. One more click gets you to fire-resistance-rated products that become systems when installed to their listing. Searching can take place from here or from the next page. The next page is easier to search. UL.com image.



UL's Fire-Resistance Directory can be found online. Visit www.UL.com. Scroll down to the black/white print area and click on 'Online Certifications Directory'. UL.com image.

When the penetrating item is indicated as being conduit, the conduit is intended for use as a raceway for electrical conductors in accordance with the NEC. Electrical conductors may be used without conduit only when permitted by and installed in accordance with the NEC, and when the conductors are specifically described in the firestop system. The maximum conductor size and the maximum number of conductors in the individual cables are specified in each system. All electrical conductors are intended to be copper unless indicated otherwise in the system.

FCIA Note: Firestopping is the process of installing materials that have been tested to key standards such as UL 1479 as a system. The system comprises the wall, floor, annular space size and shape, penetrating items and firestop materials used to extend the fire-resistance rating of the floor or wall through the breach created for the penetrating item to pass through the assembly. The paragraph above states that conduits and electrical cables are different items. Cable type, conductor size, etc., are all specified in a separate listing publication area, the 3000 series firestop systems.

When the penetrating item is indicated as being pipe, the pipe is intended for the transport of gases, liquids and the like. The maximum diameter, the minimum wall thickness and the specific material for conduit and pipes are specified in each system. All nonmetallic pipe is intended to be of the solid-core type unless indicated otherwise in the system.

Further specifications for the various types of penetrating items may be found in the documents referenced in the following chart:

Penetrating Item	Document
Electrical metallic tubing (EMT)	ANSI/UL 797
Intermediate metal conduit (IMC)	ANSI/UL 1242
Rigid metal conduit	ANSI/UL 6
Copper tubing	ASTM B88
Copper pipe	ASTM B42
Flexible metal conduit	ANSI/UL 1
Liquid-tight flexible nonmetallic conduit	ANSI/UL 1660
Rigid nonmetallic PVC conduit	ANSI/UL 651
Electrical nonmetallic tubing (ENT)	ANSI/UL 1653
Cross-linked polyethylene (PEX) tubing	ANSI/ASTM D2737
Solid-core polyvinyl chloride (PVC) pipe	ANSI/ASTM D1785 and ANSI/ASTM D2665
Cellular-core polyvinyl chloride (PVC) pipe	ANSI/ASTM F891
Chlorinated polyvinyl chloride (CPVC) pipe	ANSI/ASTM F442
Solid-core acrylonitrile butadiene styrene (ABS) pipe	ANSI/ASTM D1527 and ANSI/ASTM D2661
Cellular-core acrylonitrile butadiene styrene (ABS) pipe	ANSI/ASTM F628
Polybutylene (PB) pipe	ASTM D3000
Polyvinylidene fluoride (PVDF) pipe	ANSI/ASTM F1673
Fiberglass pipe	ANSI/ASTM D2997

UL Fire Resistance Directory Chart, Image.

Where the individual system specifies the penetrating item is to be rigidly supported on both sides of wall or floor, the support system should be designed based upon the premise the firestop system provides no support.

FCIA Note: Supporting the penetrating items as they pass through the wall or floor is assumed with many firestop systems. The reason support is needed is that the penetrating items could move prior to fire occurring or during the fire. This could affect the firestop system if the system was not tested for movement.

Where the penetrating item in the individual design is indicated as a metallic pipe, conduit, tube, duct or cable, and the firestop system consists at minimum of a fill material (such as sealants, putty or mortar), the penetrant may pass through the opening in the wall or floor assembly at any angle, provided the annular space is maintained on both sides of the wall or floor assembly and all other specifications in the design are satisfied. In all other cases, except where otherwise indicated in the system, the penetrating item should penetrate the wall or floor assembly at a 90° angle.

FCIA Note: This is a key note in the UL Guide information and something very new to the guide. The penetrating items are usually run perpendicular to the fire-resistance-rated assembly that they pass through. What this section is doing is showing that if the penetrating item is passing through the fire-resistance-rated assembly at an angle, that a firestop system can be used that does not show the penetrating item to pass through at an angle. This is a big detail that just got added to the UL Guide Information.

Some systems do not include penetrating items. These firestop systems are intended to be used to seal openings where the penetrating items have been removed or where the penetrating items have not yet been installed.

FCIA Note: There are some 'blank openings' that have been tested to UL 1479. These blank openings with no penetrating items have been tested due to needs of buildings. Why? There are always penetrating items installed, modified or removed from breaches in fire-resistance-rated walls and floors. When penetrating items are removed from the breach, all that's left is a hole, or 'blank opening'. The blank opening needs to be treated to maintain continuity of the wall assembly. Firestopping with a system tested to UL 1479 maintains that fire-resistance continuity needed to be code compliant and safe.

FORMING MATERIALS

Forming materials specified for a firestop system should not be removed after cure of the fill material, unless removal is specified in the description of the system.

FCIA Note: This statement follows the philosophy of all firestopping. Don't do something unless the system says to do it. In this case, it is referring to removing forming materials used in firestop systems.

The installation contractor and Authority Having Jurisdiction should ensure the specified properties of the packing and/or forming material are satisfied as noted in the individual Classifications. Such properties may include material type (mineral wool, backer rod, fiberglass, etc.), physical properties (size, density, etc.) and installation (depth, orientation, compression, etc.). Attention should also be given to ensure the installed material matches

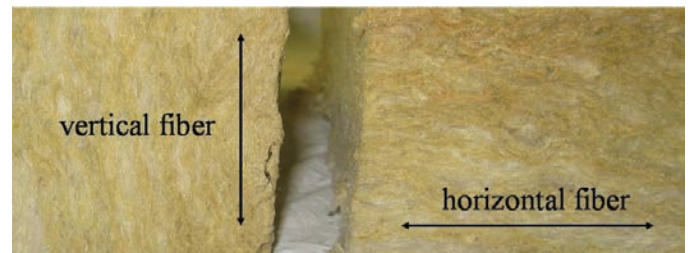
the manufacturer (where applicable) in the individual Classifications. The material and attributes are critical to the performance of the system and the ability of such system to satisfy the conditions of acceptance in [ANSI/UL 1479](#) and the local building code. The fire-resistance-rating of the system is dependent upon the use and installation of the materials specified within the respective system.

FCIA Note: There are two big things going on in this paragraph.

The concept continues with direction to the user to follow the listing in the individual system. Second, installed materials must match the classification. In the case of forming materials, in some cases the manufacturer of the material matters and in other cases it does not.

The key item to remember is that if a system specifies a manufacturer of forming material specifically including manufacturer and brand name, thickness and density, it must be used. If the system specifies a density and thickness but no manufacturer and brand name, any manufacturers' material that meets the physical properties can be used.

Finally, the orientation of the forming material is mentioned. In the case of fibrous insulations, the orientation direction of the fibers is stated in the systems. That orientation is stated in the system as vertical or horizontal.

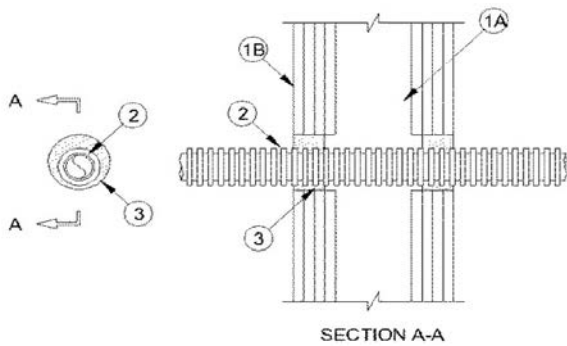


Thermafiber, an Owens Corning Company, image

FILL MATERIALS

When more than one fill, void or cavity material is specified under a single item number within a firestop system, it is intended that any single one of the materials may be used.

FCIA Note: The materials used in firestop systems are uniquely arranged and selected by the test sponsor. Where the listing states a fill material, it limits it to the materials specified by the test sponsor. Most times, the backing, packing or damming materials may be listed as a generic product with certain density, compression, gage thickness or other properties. When it comes to the actual fill material, this is specified as the use of a single manufacturers' products. There is no mixing of manufacturer 'A' and manufacturer 'B' products. This keeps responsibility for the system with the fill material manufacturer, who usually is the company that paid for the testing at whatever laboratory.



Fill Materials (3) are used to extend the continuity where a breach for penetrating items allowed the passage of pipe, etc., through the fire-resistance-rated or smoke-resistant assemblies. Firestopping provides extension of the fire-resistance-rating of the wall where breaches take place such as for pipes, cables, ducts, cable trays, bus ducts, joints and more. UL Fire Resistance Directory Image, System #2443, Copyright, UL.

CONDUCTOR AMPACITY

Where indicated in the system, the ampacity reduction due to the firestop system has been determined in accordance with UL Subject 1712, "Outline of Investigation for Tests for Ampacity of Insulated Electrical Conductors Installed in Fire Protective Systems." If not specified in the individual system, the effect of the firestop system on the ampacity of electrical conductors has not been investigated.

FCIA Note: The ampacity of cables refers to the amount of power that is transmitted through the cable. This is important as some firestop systems may require that insulation be installed around the penetrating item that passes through a breach in a fire-resistance-rated assembly. The insulation will hold heat in the area where the cable is located, either inside or outside a conduit. The cable must be kept at a certain temperature to perform. Adding insulation increases the heat that the conductor will be functioning in. To reduce heat, the amount of power running through the cable is reduced. That is what the paragraph is talking about. It is reduced power flow through a cable so the cable does not heat past its rated performance temperature. 🔥

FCIA Note: FCIA participates on UL's Standards Technical Panel (STP) where the UL 1479 and UL 2079 Standards and issues related to the standards takes place. We are very pleased to have a relationship with UL's many professional people and be part of the standards development process. It is important that FCIA be part of the STP to bring the view from the jobsite to the Standards Development Process, wherever it is . . . UL, ASTM, FM Approvals.

Look for several more articles on the UL Guide Information that covers UL 1479, Penetrations and UL 2079, Joints.



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A Short Study



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But how would that view change if a large-scale fire were to break out? How many of those structures would remain part of that panoramic landscape? If they were constructed with non-combustible materials, like concrete and steel, chances are good that, while there may be some damage, the general structures themselves would remain.

This article addresses a movement in the USA towards permitting combustible wood construction as an alternative to traditional non-combustible concrete and steel, to be used in mid-rise, and even high-rise, buildings. Further, it looks at the recent proliferation of codes which have been incorporated into the 2015 edition of the *International Building Code (IBC)* and provides an interpretation of code requirements for combustible construction, particularly as pertaining to exterior walls.

To understand these requirements, three areas of the IBC have to be considered:

1. Section 504 Allowable heights
2. Chapter 6 Types of Construction
 - a. Table 601 Fire-Resistance Rating Requirements for Building Elements
 - b. Table 602 Fire-Resistance Rating Requirements for Exterior Walls Based on Fire Separation Distance
 - c. Section 602.3 Type III
 - d. Section 602.4 Type IV
 - e. Section 602.5 Type V
3. Chapter 14—Exterior Walls
 - a. 1403—Performance requirements
 - b. 1404—Materials
 - c. 1406—Combustible materials on the exterior side of exterior walls
 - d. NFPA 285—*Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load Bearing Wall Assemblies Containing Combustible Components*

TYPES OF CONSTRUCTION

Types of construction are addressed in Chapter 6 of the IBC. Three of five construction types currently exist in the IBC where wood can be used as the primary structural component. These are Types III, IV and V. Both types III and V are broken down further into either an A or B designation. The A designation indicates that there are fire-resistance ratings required for structural building elements, such as bearing walls, floors and roofs. These hourly requirements are provided in Table 601. Designation B indicates no additional rating required.

Type V permits any allowable material to be used for the interior and exterior framing and covering.

Type III construction allows combustible interior framing, but requires non-combustible exterior walls, and further requires the exterior bearing walls have a 2-hour fire-resistance rating. There is a provision that exists that allows exterior walls to contain fire-retardant treated wood within assemblies not required to have a fire-resistance rating of more than 2 hours. Interpretations of this section are widely varied, but for discussion purposes we will assume fire-retardant treated wood (FRTW) is being used as the structural framing in exterior bearing walls.

Type IV was typically limited to large wood members (6 inches or larger) on the interior and non-combustible construction for the exterior walls. Numerous changes to the sections of 602.4 have occurred over the last couple building code development cycles. Now, Type IV exterior walls can be constructed with a minimum of 6 inch thick wood or FRTW which are covered on the exterior with a minimum of:

- Non-combustible material;
- ½" gypsum sheathing; or
- 15/32" FRTW sheathing.

Exterior bearing walls are required to have a minimum 2-hour fire-resistance rating.

HEAVY TIMBER AND CROSS LAMINATED TIMBER

Like untreated wood, FRTW and heavy timber burn readily. As the wood burns away, strength is lost due to a decrease in cross-sectional area. For heavy timber and FRTW, the burning process, at least initially, is slowed due to the mass of the element and the fire retardants, respectively. For heavy timber, if the cross-sectional area is large enough, charring on the surface will serve to provide some fire protection for the remaining un-charred cross-sectional area. Based on this, heavy timber structural elements are permitted to be considered as having an inherent fire-resistance



BigStock Photo



Portland Cement Association photo

rating of at least 1-hour based on specified loading conditions. Rarely will either element be useful after a severe structure fire exposure, even if collapse does not occur.

BUILDING HEIGHTS

First, let's consider the maximum allowable height of the three construction types which permit combustible structural elements. For brevity, the requirements for each, based on the current 2015 IBC, are investigated only as they pertain to multi-family occupancies, more commonly known as apartments, dormitories and condominiums. Also, since Type III and V construction with the designation (A) permit the greatest height in feet and stories, the focus is on those Types.

Allowable height is, by definition, the distance measured from grade plane to the highest average roof surface. The examples considered in this article presume a minimal height mansard roof where the average roof height is also at a minimum, allowing for maximum wall heights. Based on the height of all examples and Group R occupancy, a NFPA 13 sprinkler system is presumed to be installed and incorporated into the requirements explained in this article. Fire separation distances to property lines and other structures must also be considered for all buildings. IBC table 602 requires a minimal 1- hour rating for Group R occupancies with a zero fire separation distance (FSD). Based on this, and the fact that our examples are designation (A), no additional rating is required for the examples presented.

Currently, the 2015 IBC permits Type V (A) construction up to an allowable height of 70 feet and a maximum of 4 stories. Where podium construction is used, the maximum "story height" of the Type V (A)

portion of the building is measured from the top of the podium, while the Allowable height is measured from grade level as explained above. The result can be a 70 ft. building with possibly 6 stories above grade. Podiums are not limited in height.

The 2015 IBC permits Type III (A) construction up to 85 ft and 5 stories. Using the same podium method as explained above, the number of total stories is up to the designer, provided the maximum allowable height is not greater than 85 ft. and the III (A) portion is not more than 5 stories.

The IBC permits Type IV to be constructed a maximum of 85 ft and 5 stories, and again, the podium method is a permitted option.

EXTERIOR WALLS AND COVERINGS

IBC Chapter 14, Exterior Walls, list a myriad of approved materials that can be used to provide weather protection. Sections in this chapter list the minimum requirements for exterior walls, exterior wall coverings and exterior wall openings.

The maximum allowable height can actually be reduced for type III and IV, based on the type of wall covering used. Combustible coverings using foam plastic insulations, EIFS, metal composite materials, high pressure laminates and water-resistive barriers are heavily regulated and required to pass NFPA 285—*Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load Bearing Wall Assemblies Containing Combustible Components*, when used on Types III or IV construction over 40 ft. in height. This restriction does not apply to buildings with Type V construction. Non-combustible coverings/veneers of concrete, brick, steel or stone are not limited in height except where otherwise limited by the code such as for seismic load resistance and attachment requirements. Fire retardant treated wood coverings are limited to 60 ft. in height.

To bring this discussion to light, compare the requirements and limits of the 3 construction types using exterior coverings which permit the greatest heights. The table below illustrates the allowable heights permitted using the materials shown as an exterior wall covering. Generally, non-combustible veneers and siding are permitted to be installed the full height that the construction type allows. Un-treated wood products are limited to 40 ft. while FRTW can be used up to 60 ft. in Type III construction, possibly 85 ft for type IV and 70 ft. for Type V. The word "possibly" is used because it is not clear how the sections are being interpreted.

The allowable height of buildings where combustible coverings are used varies with the strictest regulations applying only to buildings using non-combustible material for the exterior walls. The maximum height is 40 ft. where non-combustible exterior walls are Type III or Type IV and constructed using combustible coverings unless the combustible coverings comply with NFPA 285. However, the same does not apply to Type V which can go to 70 ft. without additional requirements.

Further, it is unclear if Cross Laminated Timber (CLT) or FRTW have the same requirement for any additional exterior combustibility testing.

The requirement for NFPA 285 testing is not without good reason. Numerous documented fire events throughout the world, as well as the development of this standard, are explained in the white paper, *Building Exterior Wall Assembly Flammability: Have we forgotten what we have learned over the past 40 years* by John Valiulis. (Available online at www.cement.org) The US has enjoyed a very good record as compared to other countries for its low occurrences of fire in exterior veneers and coverings on high-rise buildings. As the IBC continues to permit higher wood construction, approaching and, in some cases, meeting the high-rise definition of greater than 75 ft above lowest fire department access to an occupied floor, standards like NFPA 285 should be mandatory for all buildings taller than 40 ft. using combustible construction or coverings.

It is no coincidence that multi-family buildings constructed with non-combustible material have historically been, and continue to be, the safest and most resistant to overall property loss (in dollars) in the U.S. Annual Fire loss reports by NFPA consistently show substantially less damage per fire in buildings where the height of the



Portland Cement Association photo

structure would have dictated non-combustible buildings by code. Building owners, builders, architects and designers have come to recognize that durable, concrete public buildings, private homes and businesses are better

ALLOWABLE WALL HEIGHTS BASED ON WALL COVERINGS^c

Exterior covering Construction Type	Non-combustible veneers including brick, concrete and metals	Combustible wood veneer		EIFS		CLT, covered with FRTW, gypsum or non-combustible	Combustible metal composite or weather resistant barrier	
		Wood	FRTW	Combustible substrate	Non-combustible substrate		NFPA 285 Compliant	
							No	Yes
Allowable Building Height in Feet								
Type III (A) Non combustible	85	40	60	40	85	N/A ^b	40	85
Type III (A) FRTW	85	40	60 ^a	40 or 60 ^a	85	85	40	85
Type IV non combustible	85	40	60	40	85	N/A ^b	40	85
Type IV FRTW	85	40	60 ^a	40 or 60 ^a	85	60 or 85 ^a	40	85
Type V (A)	70	70	70	70	70	70	70	70

- a. Subject to the interpretation of the AHJ responsible for approval.
- b. Not applicable
- c. NFPA 13 sprinkler protection

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equipped to resist damage from natural disasters and reduce the impact entire communities have on our planet.

A National Institute of Building Sciences (NIBS) Multi-Hazard Mitigation Council study reported that every dollar spent on reducing the potential impact of disasters saves society an average of \$4. With durable construction, the damage from major storms can be less severe, reducing the amount of energy and resources that the local community will have to spend on emergency response, reconstruction, repair and recovery.

Future code amendments to State and Local Building Codes allowing tall wood combustible construction should be fully evaluated for fire-safety in the form of full-scale fire testing prior to acceptance. Then, it can be evaluated if this product provides the level of fire-safety, property protection and resilience desired by the community.

The Portland Cement Association advocates for building codes which promote life safety, property protection and community resilience. For more information please visit www.cement.org.

William J. (Jay) Hall is Manager, Codes, for the Portland Cement Association. He is a Certified Building and Fire Code Official. He has previously served as the VA Deputy State Fire Marshal, as well as a Building Official and Fire Official in Virginia. Jay can be reached at jhall@cement.org.

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KNOW WHEN TO SAY WHEN

Friends Don't Let Friends Overfill Sleeves

When it comes to maintaining the compliance of fire-resistance-rated construction in any type of building post occupancy, one of the most difficult areas is the breaches in barriers caused by datacom cabling installations. The ever expanding information technology needs of healthcare facilities, banks/financial institution or educational buildings necessitate frequent cabling installation projects. Often times, within a few months of the new owner or tenant taking occupancy of the building, the cabling infrastructure is modified. This results in diminished code compliance as penetrations are made to accommodate new cabling and they are not always firestopped properly.

Cabling infrastructure modifications, sometimes referred to as MAC (Moves, Adds and Changes) in low voltage cabling vernacular, is the biggest challenge in maintaining code compliance of fire-resistance rated walls and floors, and, more importantly, the life-safety of a building.

While many of these applications could easily be remedied with a versatile Intumescent firestop caulk, the use of such a product can glue the cables together, thereby preventing future cable MACs.

As such, retrofittable, or re-enterable, sealing products such as non-hardening putties (see Image 1) that can be removed and reinstalled as necessary make sense.

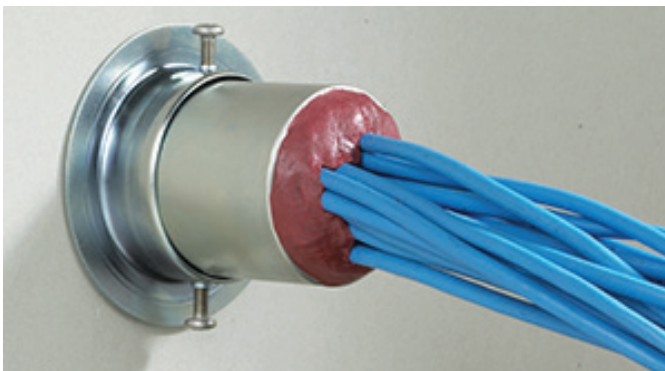


Figure 1, STI photo

Deployment of new technologies and the size and scope of the Local Area Network (LAN) are growing exponentially on a daily basis. There are a massive number of communications cables finding their way into concealed overhead and under-floor spaces of open-plan offices, healthcare facilities and educational institutions throughout the world. The MACs of low-voltage cabling is posing a significant burden to installed firestopping systems on a daily basis.

There are **2 key challenges** to maintaining code-compliant, firestopped sleeves that restore the ratings of the wall to what it was before a breach was made to accommodate the cables:

1. MAINTENANCE OF THE FIRESTOP SYSTEM
2. OVERFILLING THE SLEEVE WITH CABLES GREATER THAN THE FIRESTOP SYSTEM ALLOWS

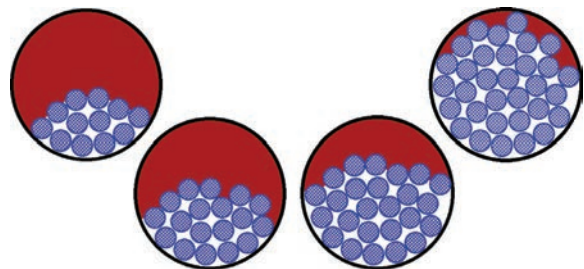


Figure 2 illustrates the typical life-cycle of low voltage cables installed in a traditional firestop sleeve where cables are added over time and firestopping is removed, eventually leaving the penetration with an excess of cables and an insufficient volume of firestop material to properly protect the opening. STI image

MAINTENANCE OF THE FIRESTOP SYSTEM

The first challenge can easily be solved with a little upfront planning. Some facilities can manage the risk by creating a Standard Operating Procedure (SOP) to mandate that a retrofittable firestopping solution is

used and replaced after any cable MAC work. While healthcare facilities are subject to increased scrutiny during surveys by state regulatory agencies or entities such as The Joint Commission, other occupancies are subject to local fire code inspections after the building goes into service. This means that over time, firestop systems may be compromised, or removed and not reinstalled properly according to code, thereby leaving a potentially devastating life-safety issue and the risk of a failed inspection.



Figure 3 illustrates a typical malleable firestop putty that should be kept on hand for retrofittable applications. STI photo

A SOP helps to establish guidelines and parameters for performing retrofit work in an existing building, including how to properly install a tested and listed **UL® Firestop System** and how to maintain that System opening on a continuing basis, along with specifications including products and sealing methods to be used. Implementing a barrier management program will also assist with the continued compliance requirements of the building. There are many examples of these programs available in both print and digital versions.

OVERFILLING THE SLEEVE

The biggest safety concern when firestopping a breach in a wall or floor with cable penetrations is allowing cables to totally displace the firestop materials and/or exceed the maximum allowable percentage of cable fill. The biggest question is always **what is the maximum % of cable fill allowed in a sleeve?**

Contrary to popular belief, there is no code-mandated cable fill percentage for datacom cabling. Sometimes contractors will cite the National Electrical Code (NEC), but the NEC makes it quite clear that fill percentages relate only to electrical cables in conduit or cable tray and are not related to datacom cable. The limiting factor that restricts fill percentage for datacom cabling is defined within the UL Systems. Often time, contractors who install firestop systems talk about the 35-40% rule of thumb, believing that the National Electrical Code (NEC) calls out the maximum allowable cable fill in a sleeved opening. This is a common misconception that artificially restricts the cable fill of sleeved openings in fire-rated and non-fire-rated construction alike.

Firestop systems evaluated to the requirements of ASTM E814/UL 1479 list the maximum cable fill percentage in openings or sleeves passing through fire-rated construction, such as the 46% fill called out in **UL® System No. WL3133: aggregate cross-sectional area of cables in sleeve to be max 46 percent of the cross-sectional area of the sleeve. Cables to be tightly bundled.** Cramming that last cable into a tightly packed sleeve can push it beyond the cable fill percentage that the original firestop system was designed to accommodate, making the installation non-compliant to the firestop system design in UL 3133.

When sleeve fill percentages are exceeded, more robust and expensive solutions are required to remedy the situation, such as firestop collars. These remediation methods also make existing sleeves static and require a new sleeve or pathway to be installed to accommodate future work.

MINIMIZING NON-COMPLIANCE

In a more perfect world, all facilities would have well-defined SOPs along with regularly scheduled inspections to verify that installed firestopping systems are properly maintained. In fact, the International Fire Code (IFC) actually requires fire protection features such as firestop systems to be as such maintained. But is this always done?

When it comes to the burgeoning technology needs of today's business environment and the need to install more cabling, firestopping can unfortunately be relegated to an after-thought. Some best practices that can mitigate future problems include:

1. Labeling of fire-resistance-rated construction to clearly identify fire-ratings.
2. Labeling of individual sleeved cable openings to identify them as requiring firestopping and possibly even the recommendation of sealing only with retrofittable firestop products.
3. Hiring a specialty firestop contractor to help monitor barrier integrity and remediate any deficiencies.
4. Choose purpose-made cable pathway devices that provide a self-sealing function to eliminate guesswork and long-term maintenance.

The old adage "plan the work and work the plan" was never more appropriate. By planning ahead for cable MACs, a facility is better equipped to deal with them on an ongoing basis.

Using FCIA's philosophy, the proper **Design, Installation, Inspection, Maintenance and Management (DIIMM)** of Firestop Systems will only help to reinforce ongoing code compliance and affording occupants with the proper level of safety. 🔥

John Zalepka is a territory manager in the NJ-NYC metropolitan area for STI Firestop (Specified Technologies, Inc.), based in Somerville, NJ. He is also the Chairman of the Freehold Township Education Foundation and the President of the Triple S Toastmasters club based at STI headquarters. He can be reached at jjalepka@stifirestop.com and you can follow his blog at www.firestopspotlight.com.

PLAN, PROVIDE, TRAIN

OSHA Safety Stand-Down May 2-6, 2016



National Safety STAND-DOWN
TO PREVENT FALLS IN CONSTRUCTION

MAY 2-6, 2016

Stop Falls Stand-Down

- Plan a toolbox talk or other safety activity
- Take a break to talk about how to prevent falls
- Provide training for all workers

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Logos: U.S. Department of Labor, CDC, NIOSH, OSHA, Occupational Safety and Health Administration, Safety Pays. Falls Cost.

the Center for Construction Research and Training are leading the effort to encourage employers to pause during their workday for topic discussions, demonstrations, and training on how to recognize hazards and prevent falls. The purpose of the National Fall Prevention Stand-Down is to raise awareness of preventing fall hazards in construction.

“Given the nature of the work, the construction industry sees the highest frequency of fall-related deaths and serious, sometimes debilitating injuries,” stated Dr. John Howard, Director of NIOSH, in the February 16, 2016 announcement of the 2016 OSHA Safety Stand-Down.

More than four million workers participated in National Safety Stand-Downs in 2014 and 2015. This year, OSHA’s goal is to reach 5 million workers. If met, more than half of the construction workers in the country will have been touched. Per Dr. David Michaels, OSHA’s Assistant Secretary of Labor, the overall goal is “to ensure every worker makes it to the end of their shift safely.”

The National Safety Stand-Down in 2016 is part of OSHA’s ongoing Fall Prevention Campaign. Begun in 2012, the campaign was developed in partnership with the NIOSH National Occupational Research Agenda program. It provides employers with lifesaving information and educational materials on how to take steps to prevent falls, to provide the right equipment for their workers and train all employees in the proper use of that equipment.

“For the last 36 years, Building Safety Month has celebrated advances in constructing safe, sustainable, affordable and resilient structures,” said ICC Board of Directors President Alex Olszowy, III, with the Lexington Fayette Urban County Government in Lexington, KY. “Building to modern codes and standards provides important safety and economic benefits to communities, their businesses, schools, churches, and homes and the people who occupy them.”

To guide their efforts, OSHA has developed the official National Safety Stand-Down website with information on conducting a successful stand-down. OSHA has also produced a brief video with more information about the 2016 Stand-Down in English and Spanish. After their events, employers are encouraged to provide feedback and will receive a personalized certificate of participation.

Fatalities caused by falls from elevation continue to be a leading cause of death for construction workers, accounting for 337 of the 874 construction fatalities recorded in 2014 (BLS preliminary data). **Those deaths were preventable.** Fall prevention safety standards were among the top 10 most frequently cited OSHA standards, during fiscal year 2014.

Therefore, the U.S. Department of Labor’s Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH) and

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WHAT IS A SAFETY STAND-DOWN?

A Safety Stand-Down is a voluntary event for employers to talk directly to employees about safety. This Stand-Down focuses on "Fall Hazards" and reinforcing the importance of "Fall Prevention". Held anytime during the week of May 2-6, 2016, companies are encouraged to conduct a Safety Stand-Down by taking a break to spend time discussing such safety topics as specific job hazards, safety equipment inspections and use, developing rescue plans and other such toolbox topics. This session can be as short as 15 minutes or include several hours of training during the week. The Safety Stand-Down should include an opportunity for employers and workers to talk about hazards, preventable measures and also the company's safety policies, goals and expectations.

WHO CAN PARTICIPATE?

Anyone who wants to prevent falls in the workplace can participate in the Stand-Down. In past years, participants included commercial construction companies of all sizes, residential construction contractors, sub- and independent contractors, highway construction companies, general industry employers, the U.S. Military, other government participants, unions, employer's trade associations, institutes, worker interest organizations and safety equipment manufacturers. In fact, the 2015 Safety Stand-Down included 1.5 service personnel and civilians from the U.S. Air Force.

Not located in the United States? Take the proactive stance and schedule your firm's Safety Stand-Down during the same time period in May! Read further to learn about safety resources for your location.

SUGGESTIONS FOR A SUCCESSFUL SAFETY STAND-DOWN

- Plan, Provide, Train—Using OSHA's Fall Prevention Campaign memorable slogan, plan your firm's Safety Stand-Down(s) early. Designate a coordinator at each of your work sites. Work with others involved at the site—general contractors, other subs, owners, architects and more.
- Review Your Firm's Safety Program, including Fall Protection—What types of fall could occur? Does your firm's safety program need revisions? Are there specific areas that need more reinforcement? Does your firm have a Rescue Plan?
- Develop a Safety Stand-Down presentation that meets your firm's needs. The information presented should include hazards, protective methods and your

company's safety policies and expectations. Determine if the time spent will include "hands-on" training or if it will be delivered orally or written.

- Promote the Safety Stand-Down—Making the program interesting to your workers will have a stronger impact and better retention. Some employers reported that serving snacks increased participation in past years. Encourage workers to discuss their experiences and make suggestions.
- Include Resource Material—Visit www.OSHA.gov/stopfalls resources to download resources in many languages, including Spanish, Polish, Russian and more.
 - Follow Up—Gather feedback from the Safety Stand-Down and revise your firm's safety program if needed.

PROOF OF PARTICIPATION

As with the previous Safety Stand-Downs, employees can download a certificate of participation signed by Secretary of Labor Thomas E. Perez after the event. Employers will also be able to provide feedback about their Stand-Down.

For more information on the success of last year's Stand-Down and to learn how to partner with OSHA in this Stand-Down, visit <http://www.osha.gov/StopFallsStandDown/>.

The page provides details on how to conduct a stand-down; receive a certificate of participation; and access free education and training resources, fact sheets and other outreach materials in English and Spanish.

To learn more about preventing falls in construction visit <http://www.osha.gov/stopfalls/>.

ADDITIONAL RESOURCES

Visit www.OSHA.gov/StopFallsStandDown to learn more about the tools available to have a successful Safety Stand-Down, and also as a valuable resource all year long. OSHA is also partnering with key groups to assist with this effort, including the following:

- National Institute for Occupational Safety and Health (NIOSH): www.cdc.gov/niosh
- National Occupational Research Agenda (NORA): www.cdc.gov/niosh/nora
- National Safety Council: <http://www.nsc.org>
- American Society of Safety Engineers (ASSE): www.asse.org
- Center for Construction Research and Training (CPWR): www.cpwr.com
- Canadian Centre for Occupational Health & Safety: www.ccohs.ca/oshanswers/legisl
- WorkSafeBC: www.worksafebc.com

Use these valuable resources to create the May Safety Stand-Down and to reinforce your firm's safety education. 🔥



AT 86, PETER HENSLEY STILL INSPIRES

Design efficiency, exacting assembly, graciousness and continuous improvement are among living legacy.



Peter Hensley holds an in-progress SJS-FP sample at his home-based EMSEAL workshop.

"How's your father?" is the most asked, non-technical question during our SWRI-Validated Expansion Joint Training sessions at EMSEAL. More than 300 of you—architects, engineers, consultants, contractors, distributors, independent reps and owners—have come through this program so far, and we are flattered by how often you ask about Peter.

He's doing great by the way. At 86 years young, he's in his workshop every day, producing the immaculately assembled, de-burred "handling pieces", which he has affectionately dubbed the beautiful SJS-FP samples that have become as representative a calling card as the Company's logo.

I also love that, when asking, you invariably and respectfully use the term "father."

While he's my "dad" at Thanksgiving, Peter truly is "father" to so much more at EMSEAL.

The father of technical accuracy, quality, graciousness and integrity, Peter's legacy influences each new generation of employees that joins the company and continues to shape our approach to market-driven innovation and customer-service.

Last November, as a panelist at the TransOvation innovation conference held in 3M's Innovation Center in St. Paul, MN, I was asked to reflect on EMSEAL's innovation ethic. My summation: **"Innovation is the distillation of purpose to its simplest form."**

EMSEAL's many breakthroughs, from SEISMIC COLORSEAL to SJS to DSM to EMSHIELD, QUIETJOINT and the just-released QUICKCOVER, have been driven by simplifying systems, removing extraneous components, reducing tensile stresses at bond-lines and within materials, eliminating invasive anchoring and incorporating multiple functions into one product.

This innovation foundation is in no small part built on, and perpetuated by, what Peter Hensley taught and continues to remind us of today. I called him yesterday to check in and learned that he had 10 new samples ready to deliver, but that he had also spent the day "improving the ergonomics of my workshop."

Ergonomics—the study of efficiency—and its resulting application of continuous improvement are an ingrained trait of Peter's and a cornerstone of our company.

An aeronautical engineer by training, Peter was on the design team in 1947 that prototyped the plane that first flew in 1952 and would become the Handley Page Victor B-1 bomber in the UK. The Victor featured many breakthroughs in design that enabled its 35-years



Always seeking improvement, Peter demonstrates his latest finishing technique.

of continuous service. The notions ingrained in him there—design efficiency, material selection and exacting assembly—became the measure of how we innovate and manufacture at EMSEAL to this day.

Peter's practical resolve and love of problem solving are at the heart of our "Custom Quick" philosophy of solving the myriad unique expansion joint challenges presented by an ever-evolving built environment. Providing out-of-the-box, as well as tailored, solutions and then delivering "bespoke" products and assemblies is what we do. And we pull it off at lead times to meet the demanding schedules of the stadium, airport, school, municipal, highway and other construction projects we service by the hundreds around the world every year.

If patience is a virtue, Peter is truly a saint. On some long days in the office though, even his seemingly tireless reserves as a teacher had their limits. If one took advantage of his knowledge, by not first applying one's own ample brains to solving a problem, he would allow us to stumble into the brambles of logical breakdown then dismiss us, not with as pithy a motto as IBM's "Think", but with the far more poetic, **"Use your LOAF man!"**

Thanks for placing your trust in EMSEAL, and thanks for asking!

—Lester Hensley, CEO (and grateful son) 🔥

BRIGHT IDEAS



STI FIRESTOP—THE EXPERTS THAT EXPERTS TRUST



As firestop contractors, you are the local expert when it comes to firestopping. Firestopping in educational occupancies can be particularly challenging. Laboratory environments may involve highly flammable plastic pipes, and certainly in dormitories, the protection of occupants (i.e. someone's child) is of paramount importance. To help supplement your expertise, trust STI's team of professionals to help you look good to your client.

With a team of highly trained and degreed fire protection engineers and applications engineers with more than 250 years of accumulated experience, no firestop manufacturer can match STI's level of expertise in the field of firestopping. With instant access to our engineers and 24-hour response time on engineering judgment requests, STI is the expert the experts trust.

For expert advice and responsive turnaround, call STI Firestop at 800-992-1180 or email us at techserv@stifirestop.com.

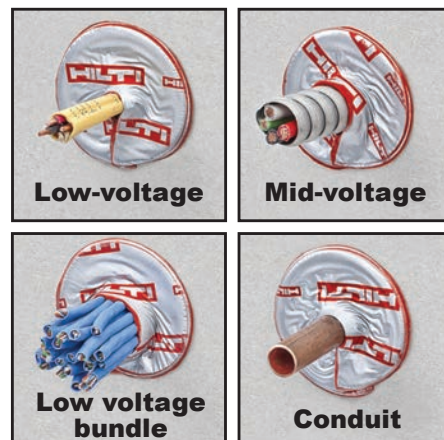
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- Mid-voltage (Romex, metal-clad, power cables)
- Low voltage bundle (up to 100% fill)
- Conduit (copper, steel, cast iron, PE)

The HILTI Firestop Cable Disc is easily adaptable to regular Hand irregular openings in both new and existing cable installations. And with a shelf-life of up to 24 months, this product provides a versatility not found with other products on the market.

For more information, contact 1-800-879-8000 or visit www.us.hilti.com/firestop.



ROXUL® SAFE® PROTECTS BUILDINGS AGAINST THE SPREAD OF FIRE

ROXUL® Inc., North America's largest producer of stone wool insulation, offers a full line of insulation products that provide superior fire resistance. ROXUL® SAFE® is a top choice for fire-first applications, designed for commercial, industrial and residential buildings as firestopping insulation. It is ideal for filling perimeter gaps between concrete floor slabs and exterior wall systems, around conduit pipe and duct openings through walls and floor slabs and between fire walls and ceiling slabs.

ROXUL® SAFE® is used in conjunction with a fire sealant to prevent the passage of fire and smoke.

Made primarily of basalt rock and recycled steel slag, ROXUL® insulation can withstand temperatures up to 1,177° C (2,150° F). Classified as non-combustible insulation by ASTM E136 and CAN4-S114, a number of ROXUL® commercial products are also UL/ULC approved.

ROXUL® insulation will not contribute to flame spread, but rather, can actually slow the progression of a fire and allow extra time to evacuate. It will not produce toxic smoke or gases in the event of a fire. Architects, designers and specifiers count on ROXUL® insulation to provide reliable occupant comfort and safety.

To learn more, visit www.ROXUL.com or call 1-800-265-6878.



WITH LIVES ON THE LINE, WHAT'S IN YOUR JOINT? FIRELINE 520™ FIRE BARRIERS

One of the biggest obstacles of traditional fire barriers is the complexity of their installation. We've gone to great lengths to engineer the Fireline 520™ fire barriers to address these problems. Fireline 520™ Fire Barriers hold several design patents that make them different from any other product in the market and give you peace of mind that your building will be properly protected.

With features like factory fabricated splices, preassembled transitions, pre-attached integral flanges and drop-in installation, you can count on installation efficiency and accuracy. For more information about the Fireline 520™ Fire Barrier, visit www.inprocop.com/fireline520.



FIRE-RATED WALL EXPANSION JOINTS—NOW AVAILABLE FROM EMSEAL



EMSHIELD WFR are 2-hour or 3-hour fire-rated expansion joints that are a dual-sided primary seal for both new and retrofit wall applications. The fire-retardant-impregnated foam and sealant bellows on both the interior and exterior faces work together to ensure fire protection in accordance with UL-2079. They provide a watertight thermal seal, offer exceptional acoustic dampening, are easily installed and conform to joint-size irregularities.

As a single unit fire-rated expansion joint EMSHIELD eliminates the need for additional fire stops at the joint gap thereby eliminating the need for multiple separate products that perform the roles of sealing, bridging and fire-rating joints—with EMSHIELD WFR one install does it all. Available in 26 colors from EMSEAL Joint Systems, Ltd. For the complete line of EMSHIELD UL/ULC-certified fire-rated products visit www.EMSEAL.com or call (508) 836-0280.





A SIMPLE "CAULK & WALK" SOLUTION FOR COMBUSTIBLE PIPES

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For more information on our available listings and ordering information, contact us at 1-800-853-3984 or visit www.SelfSealFirestops.com.

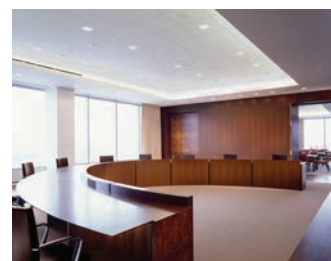
USG EXPANDS HIGH-PERFORMANCE CEILING PANELS PORTFOLIO

USG Corporation introduces four new products to its high-performance ceiling panel line—all dedicated to providing high-performance, balanced acoustics that have an impact on human interactions in spaces where we live, work and play.

The new products include USG Mars™ High-NRC/High-CAC Acoustical Panels, USG Eclipse™ High-NRC Acoustical Panels, USG Mars™ Healthcare High NRC Acoustical Panels and USG Orion™ Acoustical Panels. All four feature the USG ClimaPlus™ 30-year lifetime system warranty against visible sag, mold and mildew and are designed for use in everything from open office space and doctors' offices to hospitals and schools.

Using a balanced acoustics approach is key when selecting which ceiling panels to install. A combination of moderate sound absorption (Noise Reduction Coefficient—NRC) and high sound attenuation (CAC) has proven to be one of the best overall solutions, and USG provides a plethora of different ceiling solutions, ranging from economical to higher-performing ceiling systems, from which to choose, in addition to the many fire-resistance-rate assembly options using USG Type X and Type C products.

For more information on the new ceiling products, visit usg.com/ceilings.



NEW LIGHTWEIGHT FIRE-RATED CABINET DESIGN SAVES ON COSTS

JL Industries is now introducing the next generation of cabinets—the Fire-FX2™ Series—a new design for fire-rated cabinets using lightweight mineral wool insulation. The three most popular sizes of the new patent-pending FX2 cabinet weigh an average of 14.75 lbs less per cabinet than the original design introduced 24 years ago, resulting in easier installation and handling.

All recessed architectural series extinguisher, valve, hose and AED cabinets in steel, aluminum, stainless, bronze and brass are available as fire-rated cabinets with the new FX2 design, from trimless to 4-1/2" projection trim. The new insulation is foil-faced Firespan™ 90 by Thermafiber® which is attached directly to the outside of the cabinet instead of being sandwiched in a double tub design. FX2 cabinets have been tested by Underwriters Laboratories® to maintain one and two hour fire-rated wall barriers in accordance with ANSI/UL-1479, ASTM E814 and ULC/Can S115 for membrane and penetration firestops. FX2 cabinets will be available in early October and are in the process of being stocked in all 10 warehouse locations. Updated product submittals and the new fire protection catalog with new wall openings are now available online.

For more information, contact customer service at 800-554-6077, or find more details on the website at www.activarcpg.com/jl-industries. 🔥



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CODES AND STANDARDS NEWS

UL'S 1479/2079 STANDARDS TECHNICAL PANEL MEETS



FCIA's Standards Committee Chairs, Eric Keeton and Tracy Smith, joined by Gary Hamilton, Jay McGuire, Don Murphy and Bill McHugh, met with UL's Standards Technical Panel to discuss key industry issues in February.

- How is patching and repair of firestop products after destructive testing to be done? Should all the firestop products be removed after destructive testing? Should W-Water Resistance-Ratings increase from a 3' head of water to something more-6', 8' pressure, or more?
- How should membrane penetrations be handled—as one side of a through penetration or as its own system?

The group discussed various issues, including, but not limited to:

- How far can a sleeve extend above the floor or beyond the wall and still conform to the listing? Where should the firestop product be located in the annular space—at the end of the sleeve? At plane of wall or floor?

The meeting produced a varied and productive discussion on a wide range of items. Be sure to attend ECA 2016, FCIA's Education and Committee Action Conference, to gain more insight into this. UL's Primary Engineer for Fire Resistance, Luke Woods, will present issues and possible solutions to these conditions and more.

FCIA SUBMITS FIRE CODE PROPOSAL

FCIA submitted a code proposal to bring more clarity to the International Fire Code 703.1, Maintenance, through building owner and managers' abilities to store and retrieve life-safety drawings and firestop systems documentation.

There are going to be several proposals debated in April at ICC's Code Action Committee Hearings in Louisville, KY. Keep an eye on www.FCIA.org for info about the ICC's www.ICCsafe.org webcast to watch the hearings live.

FCIA STANDARDS COMMITTEE SUBMITS ASTM PROPOSALS

FCIA's Standards Committee worked with the FCIA Manufacturer and Special Inspection Agency partners at ASTM's E06.21 Task Group in October to review the ASTM E 2174 and ASTM E 2393 Standards. As a result of the meetings, several proposals were developed, sent for review and then submitted to ASTM. Proposals include a ballot to define the inspector, inspection agency, installer and premises, along with several others.

Over the past few years, FCIA has tried to add language in the appendix to help the standards user and construction process. Proposals balloted that have not been approved include the International Firestop Council's guidelines on 'how to cut sealants and where to measure the

thickness of sealants' to verify that the system has been followed. FCIA also attempted to describe the firestop company accreditation programs (UL Qualified Firestop Contractor, FM 4991 Standard for the Approval of Firestop Contractors and International Accreditation Services Accreditation Criteria AC291). While attempts have been made, there has been resistance met from the ASTM voting body.



We continue to work together to build consensus with our ASTM friends on many of these fronts.

ICC GROUP B HEARING SCHEDULE NOW AVAILABLE



The schedule for the 2016 Group B Committee Action Hearings being held April 17-27 in Louisville, KY is

now available for download at <http://www.iccsafe.org/wp-content/uploads/2016-Group-B-CAH-Hearing-Schedule.pdf>. The Group B *International Codes* include administrative provisions for all codes, the structural chapters in the *International Building* and *Existing Building Codes*, the building and energy chapters in

the *International Residential Code* and all chapters in the *International Fire, Energy Conservation Code* and *Wildland-Urban Interface Codes*.

Attendance and participation in the hearings, whether in person or streaming live, is open to all who are interested. To participate in the Online Governmental Consensus Vote (cdpACCESS) which follows the hearings, ICC Governmental Memberships must be current by March 18. Details can be found at www.iccsafe.org/EVDS.

NEW NFPA ONLINE COMMUNITY, XCHANGE, KEEPS YOU UP-TO-DATE ON LATEST CODES & STANDARDS

Information NFPA Xchange™ is NFPA's new, free online community. NFPA Xchange lets you connect with professionals worldwide, explore content, share ideas and ask questions and is the latest way to stay up-to-date on codes and standards related information. NFPA invites FCIA Members and others to join NFPA there!

NFPA Xchange allows users to search or browse information on topics ranging from fire protection systems and electrical, to building and life-safety, emergency response and more. Content is submitted by community users, NFPA staff and subject matter experts alike.

NFPA members will find additional benefits within the exclusive 'Members Only' section of NFPA Xchange. Members are able to access the Technical Questions

Service membership benefit in Xchange, where they can connect directly with technical staff and submit questions on standards.

Plus, only in Xchange are NFPA members able to search and view other technical standards questions that have already been submitted and answered, allowing all members to benefit from individual questions.

Visit NFPA Xchange and join this new community today at www.community.nfpa.org/welcome.



ICC ANNOUNCES THEME FOR 2016 BUILDING SAFETY MONTH

The International Code Council's (ICC) theme for 2016 Building Safety Month, a public safety awareness campaign celebrated in May, is *Building Codes: Driving Growth through Innovation, Resilience and Safety*.

During May, ICC's 57,000 Members, along with other professionals in the construction and design community, will conduct school assemblies, host information booths at

builder supply stores and implement proclamation signing ceremonies to increase awareness about the importance of building and remodeling to modern codes and standards.

Building Codes: Driving Growth through Innovation, Resilience and Safety will be supported by weekly themes that spotlight a specific area of building safety and fire prevention. They are:

Week One, May 2-8, *Building Solutions for All Ages*

Week Two, May 9-15, *The Science behind the Codes*

Week Three, May 16-22, *Learn from the Past, Build for Tomorrow*

Week Four, May 23-29, *Building Codes: A Smart Investment*

Many resources will be available for free download and others may be purchased from the ICC Store in the near future. Keep an eye on www.ICCSafe.org for more info.



ICC CODE PROPOSALS PUBLISHED IN EARLY MARCH

The ICC code development process kicked off January 11 with code proposal submissions that had to be entered by midnight. While submissions are electronic, the ICC code development staff still reviews the proposals and places them logically in a document. With hearings in

April, the publication of the proposals in one place gives those interested in the code development process the opportunity to review the proposals and prepare for the hearings, where public debate takes place.

NFPA'S CODE DEVELOPMENT PROCESS

At NFPA, we're in a waiting period before the NFPA Fire Protection features Committee Meeting in Ft. Lauderdale. Look for a more active code corner in the

next issue of Life Safety Digest as we review published documents from ICC and NFPA.



NANAIMO, VANCOUVER ISLAND, BC
PHOTO: HA CYAN CREATIVE INC.



CONNEXIONS

JUNE 8-11 2016

VANCOUVER ISLAND
CONFERENCE CENTRE
NANAIMO, BC, CANADA

FESTIVAL2016.RAIC.ORG

PRESENTED BY

RAIC | IRAC
Architecture Canada

INDUSTRY NEWS

FCIA FRIEND, ADVOCATE AND NOW, HONORARY MEMBER!



Every so often, you are lucky enough to partner with an exceptional individual or company who helps to elevate your organization to greatness. Someone who works tirelessly to promote the standards and business principles both organizations share. When that happens for FCIA, we recognize that individual with the FCIA Honorary Membership Award.

This past November, FCIA honored The Joint Commission's Director of Engineering, George Mills with the Honorary Membership Award. In addition to his support of the Barrier Management Symposiums, George brings with

him a passion about patient safety that is both contagious and heartfelt. Listen to him speak at an ASHE Annual Conference and you will agree quickly. His support for the BMS programs have been integral in reducing fire-rated barrier violations in The Joint Commission audits due to the education about fire-resistance-rated and smoke-resistant systems in buildings.

Separately, Anne Guglielmo, also of The Joint Commission, was honored as FCIA's Advocate of the Year. Her excellent performance and unwavering dedication to ensuring safety in buildings through Barrier Management Systems has been outstanding.

The Honorary Member Award has only been awarded a handful of times. Congratulations to George and Anne, and thank you for your continued support and partnership!

BUILDING SAFETY JOURNAL HIGHLIGHTS FIRESTOPPING ISSUES TO ICC MEMBERSHIP

This past October, the ICC's publication, Building Safety Journal, featured an article by FCIA Executive Director, Bill McHugh, on FCIA's use of standards to build the 'DIIM' Philosophy—the proper Design, Installation, Inspection and Maintenance & Management of Firestopping. The article, 'IAS, ICC and FCIA—A Worldwide Partnership', advocated for the 'DIIM' of Firestopping.

The FM 4991, Standard for the Approval of Firestop Contractors, UL Qualified Firestop Contractor Program, IAS AC 291, FM & UL Firestop Exams and maintenance

had top billing from our firestopping industry in this key publication with circulation to the 57,000 ICC Members. Check out the article at http://bsj.iccsafe.org/October_2015_BSJ/index.html#/31/.



ASHE PREPS MEMBERS FOR NFPA 101-2012



The American Society for Healthcare Engineering (ASHE) will be conducting a series of five webinars to prepare for the adoption of the 2012 Edition of NFPA

101. The first webinar, "The 2012 Edition of NFPA 101 and Its Impact on Existing Health Care Facilities" is scheduled for April 6th. The webinar will be presented by William E. Koffel, P.E., FSFPE and Lennon A. Peake, P.E. A synopsis of the webinar is as follows:

The Centers for Medicare & Medicaid Services is considering the adoption of the 2012 edition of NFPA 101. This webinar will highlight the impact of the 2012 edition of NFPA 101 will have on existing health care facilities and the rationale behind the changes from the 2000 edition. In addition to the changes covered by the categorical waiver process, changes that will be discussed include a limited use of two operations to open a door, expanded use of sliding doors, door inspection requirements, use of non-health care space by inpatients, smoke barriers on non-health care floors, and sprinkler requirements for certain

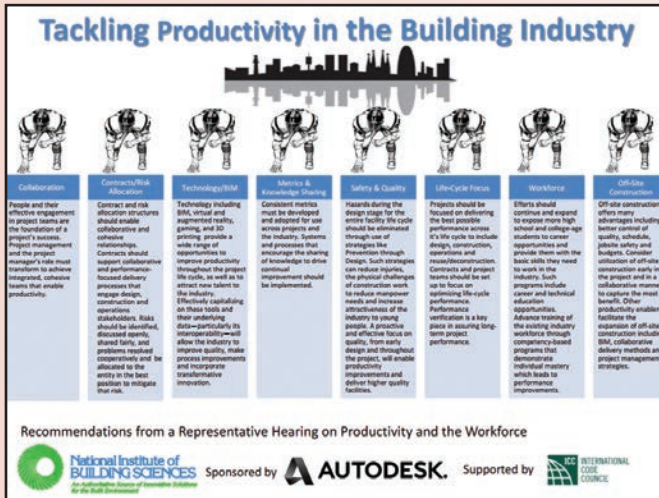
existing buildings. A brief introduction to the new Chapter 43 on rehabilitation will be included, with more details to follow in a subsequent webinar.

The other four webinars will focus on new health care facilities, the reference standards (such as NFPA 25,

NFPA 72, and NFPA 80), rehabilitation projects (Chapter 43 of NFPA 101), and NFPA 99-2012.

For registration information go to: <http://www.ashe.org/education/webinars/index.shtml>

NIBS INSTITUTE TAKES RECOMMENDATIONS FROM HEARING TO TACKLE BUILDING INDUSTRY PRODUCTIVITY



This past fall, the National Institute of Building Sciences held a Representative Hearing on Productivity and the Workforce. The U.S. building industry is under increasing pressure to deliver high-performance buildings to meet the needs of owners, occupants and the government. Owners and contractors are looking for opportunities to improve certainty in schedule, performance and cost while managing risks. At the same time, there is an increasing

concern from multiple segments of the industry on the availability of a skilled workforce, as well as the productivity of the buildings workforce today and into the future.

Efforts are underway on a variety of fronts to address productivity challenges, including the expansion of off-site construction techniques; development of enhanced tools and processes such as building information modeling (BIM); enhancing mid- to long-term forecasts of workforce needs; and attracting new, technology-savvy entrants to the workforce through development of science, technology, engineering and mathematics (STEM) education programs.

Based on oral and written testimony provided by 18 representatives from a broad group of industry organizations during the hearing, the Institute developed an infographic, titled "Tackling Productivity in the Building Industry," to identify the major themes that will help the industry address the productivity challenges. Visit www.NIBS.org for info.

Read the news release at <http://www.nibs.org/news/268937/Institute-Takes-Recommendations-from-Hearing-.htm>.

View the infographic at <http://c.ymcdn.com/sites/www.nibs.org/resource/resmgr/Docs/TacklingProductivity.pdf>.

NATIONAL SAFETY STAND-DOWN IS MAY 2-6

The U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) and other federal safety agencies announced Feb. 16 that they have designated May 2-6, 2016, for the third annual National Safety Stand-Down. The event is a nationwide effort to remind and educate employers and workers in the construction industry of the serious dangers of falls—the cause of the highest number of industry deaths in the construction industry.

To learn how to partner with OSHA in this Stand-Down, including details on how to conduct a stand-down, receive a certificate of participation, and access free education and training resources, fact sheets and other outreach materials in English and Spanish, visit: <http://www.osha.gov/StopFallsStandDown/>.

To learn more about preventing falls in construction visit <http://www.osha.gov/stopfalls/>.

CELEBRATING 100 YEARS OF THE PORTLAND CEMENT ASSOCIATION



The Portland Cement Association (PCA) kicked off a year-long celebration of its 100th anniversary at the 2016 World of Concrete.

Over the past century, PCA has become widely recognized as the authority on the technology, economics and applications of cement and concrete. As the voice of

America's cement manufacturers, PCA provides industry leadership and legislative advocacy in support of sustainability, infrastructure investment and overall excellence in construction throughout the U.S.

Concrete is one of the most widely used building materials on Earth. Many concrete roads and buildings that date back to PCA's founding a century ago remain

MEMBERSHIP HAS ITS PERKS...



ADVOCACY

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



EDUCATION

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



SUPPORT

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



NETWORKING

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

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

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

CONTACT US TODAY!

708.202.1108 • INFO@FCIA.ORG • WWW.FCIA.ORG

in active use today, providing evidence of concrete's durability and its long-standing role as a building block of society.

"PCA's centennial year is an opportunity to celebrate not only the association, but also the tremendous progress the concrete industry has made—and will

continue to make—in building a resilient and sustainable world," says PCA President and CEO, Jim Toscas.

A list of upcoming centennial events can be found on the PCA website, www.cement.org/top-resources/pca-centennial.

DHI EDUCATING THE FUTURE OF THE INDUSTRY

The Door and Hardware Institute's annual education programs kick off this April 10-17 with their Technical School in Lansdowne, VA. The Technical Schools are perfect for those individuals new to the industry and those with limited field experience. Courses are offered on Architectural Hardware and Applications, Door & Frame Applications, Specification Writing, Using Door & Frame Standards and more.

Additional Technical Schools will be offered throughout the year in various locations throughout North America. For more information, visit www.dhi.org/INDUSTRY/education/schedule.php.



FCIA BOARD OF DIRECTORS SHAPING THE DIRECTION FOR 2016



FCIA's Board of Directors met in Las Vegas this Feb. 1-2 to come together for the first time in 2016. The meeting took place at the Monte Carlo Resort & Casino, the site of the next FCIA Education and Committee Action

Conference. While there, the board reviewed numerous initiatives for 2016 and beyond. Each committee was reviewed and discussed in detail, covering both reports of past activity and goals for future plans. Look for actions from the Technical, Apprenticeship and Education Committees, Accreditation, Standards and Code Committees to be discussed at the Education and Committee Action Conference 2016.

All of your past FCIA Boards have been very active and very involved, resulting in stronger programs that deliver for both the FCIA membership and those affected by better fire- and life-safety through FCIA's programs worldwide.

CSI-FIRESTOP PARTNER SINCE THE BEGINNING

Much is talked about in the Firestop industry about FCIA's 'DIIM' Philosophy. The belief that proper Design, Installation, Inspection and Maintenance and Management of installed firestop systems leads to greater and improved fire- and life-safety systems in buildings is largely supported worldwide.

What you may not know is that the 'DIIM' conversation, in its early stages, started in 1990 with input from The Construction Specifications Institute. At the time, FCIA started a dialogue at CSI's Northern Illinois and Chicago Chapters, while similar exchanges were also going on in Indianapolis, Boston, San Francisco, Salt Lake City and Denver.

Then, in 2001, the partnership between CSI and FCIA expanded. FCIA was invited to present a program at CSI's Annual Convention about the vision for the Firestopping future—FM 4991 Approved or UL Qualified Firestop Contractors, independent inspection by accredited companies (IAS AC 291) to ASTM E 2174 and ASTM E 2393 Standards for On Site Inspection of Firestops, to name a few. And the partnership has only grown more over

the years, with FCIA presenting educational programs at CSI's annual CONSTRUCT exhibition for the past several years.



In early January, we had the opportunity to present at CSI Chicago's January Roundtable Specifier meetings. We outlined the firestop industry challenges and how the FCIA's vision from 1999—from CSI and other influences—was working. It was reported during the session that over 50% of the high-rise, healthcare and educational occupancies in Chicago were specified FM 4991 or UL Qualified Firestop Contractors and installed by companies that have the accreditation in Chicago alone. That's a huge development in the industry considering there were no programs available to specify 16 years ago.

The feedback and support over the years from our specifier friends who have provided great input to FCIA's programs, support the efforts we've all made for improved fire- and life-safety. For more information on CSI and their programs, visit www.csinet.org/.

CHES ONTARIO CONFERENCE & TRADE SHOW GEARING UP

The Canadian Healthcare Engineering Society (CHES) Ontario Chapter will be kicking off their 36th Annual Conference and Trade Show in Kitchener, ON this May 29-31. The theme, "Leading Through Change", provides attendees with the information and guidance required to help lead facility teams through the daily challenges at healthcare facilities in Canada.

The event features more than 70 exhibitors, as well as two days of education sessions filled with key information on changes to the standards, how to keep

up with the changing energy field and more, all tailored for Architects, Engineers, Consultants, Healthcare Directors, Managers, Supervisors and frontline staff and all others working in the field.

For more information, visit www.ron-durocher.square-space.com/.



FCIA PARTICIPATES AT NFPA CONFERENCE AND ON FIRE PROTECTION FEATURES COMMITTEE

FCIA heads to two NFPA Events this year. In June, NFPA's Expo is in Las Vegas, NV where FCIA is speaking and has an exhibit booth. Then, in July, we travel to Ft. Lauderdale

for NFPA's Fire Protection Features Committee Meetings. FCIA's Bill McHugh serves on NFPA's FPF Committee providing input from FCIA and proposals as well.

FCIA WORLD TOUR BEGINS

Spreading the word of the 'DIIM' of Firestopping and Effective Compartmentation to audiences around the globe is one of the key initiatives of FCIA. Through participation at various strategic events, FCIA presents to key decision makers and influencers the importance of firestopping installed by a specialty firestop contractor, the importance of implementing a comprehensive Barrier Management strategy for continued protection and more.

Some of the upcoming events where you will see FCIA or *Life Safety Digest* are:

- IFMA Facility Fusion—April 12-14, Indianapolis, IN
- IFMA Facility Fusion Canada—May 4-5, Montreal, QC
- AIA Convention Philadelphia—May 19-21, Philadelphia, PA
- CHES Ontario Annual Conference and Trade Show—May 29-31, Kitchener, ON

- RAIC Festival of Architecture—June 8-10, Nanaimo, BC
- NFPA Conference & Expo—June 12-16, Las Vegas, NV
- ASHE Annual Conference—July 10-13, Denver, CO
- OFSEC—September 5-7, Oman
- CONSTRUCT—September 7-9, Austin, TX
- IFMA World Workplace—October 5-7, San Diego, CA
- ICC Building Safety & Design Expo—October 15-17, Kansas City, MO
- Campus Fire Safety Forum—November 1-3, Mesa, AZ

Firestopping and Effective Compartmentation affect building occupancies worldwide. Fire knows no borders. That's why it is critical that FCIA spread the word of the 'DIIM' of Firestopping to audiences around the globe. Trade show booths, publication bins and presentations all help FCIA to deliver the right message to the right audience.

LOOKING FOR THE BEST PLACE TO WORK? WE KNOW WHERE TO FIND IT!

**NATIONAL
BEST AND
BRIGHTEST
COMPANIES
TO WORK FOR**

The National Association for Business Resources (NABR), established in 1996, is a professional business association focused on connecting, educating and empowering businesses across the country through collaboration and utilization of proven measurements and tools

for business success. Their programs focus on improving business operations that create a positive impact and begin at the employee level all the way up to the leadership, and hence form a stronger local business community.

Through the Best and Brightest programs, the National Association for Business Resources provides specialized business services, education and resources for businesses throughout the United States, and then recognizes the most influential, trend-setting companies across the country and regionally with their Best and Brightest Awards.

This year, FCIA is proud to recognize FCIA Contractor Member Elzinga & Volkers who was recently named one of the **Nation's Best and Brightest Companies to Work For** in 2015! Congratulations to the entire team in Michigan on this notable accomplishment!

FCIA 2016 INDUSTRY CALENDAR

MARCH

March 9-11

Association of General Contractors
San Antonio, TX
www.AGC.org

March 20-23

ASHE Planning Design & Construction
Summit and Exhibition
San Diego, CA
www.ASHE.org

APRIL

April 10-13

ASTM E06
San Antonio, TX
www.ASTM.org

April 10-16

DHI's National Conference Center
Lansdowne, VA
www.DHI.org

April 12-14

International Facility Managers
Association (IFMA) Facility Fusion US
Indianapolis, IN
www.facilityfusion.ifma.org/indianapolis/home

April 15-19

AWCI Annual Convention
& INTEX Expo
New Orleans, LA
www.AWCI.org

April 16-27

ICC Committee Action
Hearings—Cycle B
Louisville, KY
www.ICCSAFE.org

MAY

May 3-6

FCIA Education and Committee
Action Conference
Las Vegas, NV
www.fcia.org/articles/ECA2016.htm

May 4-5

International Facility Managers
Association (IFMA) Facility
Fusion Canada
Montreal, QC
www.facilityfusion.ifma.org/montreal/home

May 19-21

AIA Convention
Philadelphia, PA
www.http://convention.aia.org/event/homepage.aspx

May 25-29

Construction Specifications
Canada Conference
Halifax, NS
www.CSC-DSS.ca

May 29-31

Canadian Healthcare Engineering
Society (CHES) Ontario Annual
Conference & Trade Show
Kitchener, ON
www.ron-durocher.squarespace.com

JUNE

June 8-11

2016 Festival of Architecture
Vancouver Island/Nanaimo, BC
www.RAIC.org

June 12-16

NFPA Conference & Expo
Las Vegas, NV
www.NFPA.org

June 25-28

BOMA International Conference
& Expo
Washington, DC
www.BOMA.org

JULY

July 10-13

ASHE Annual Conference and
Technical Exhibition
Denver, CO
www.ASHE.org

SEPTEMBER

September 5-7

Oman Fire, Safety & Security Expo
(OFSEC)
Muscat, Sultanate of Oman
www.muscat-expo.com

September 7-9

CSI CONSTRUCT
Austin, TX
www.constructshow.com

September 11-13

Canadian Healthcare Engineering
Society (CHES) Annual Conference
Vancouver, BC
www.CHES.org

OCTOBER

October 5-7

International Facility Managers
Association (IFMA) World Workplace
San Diego, CA
www.worldworkplace.ifma.org

October 15-25

ICC Annual Conference and Public
Comment Hearings
Kansas City, MO
www.ICCSAFE.org

October 26

ASTM E06 Meetings
Orlando, FL
www.ASTM.org

NOVEMBER

November 1-3

Campus Fire Safety Forum
Mesa, AZ
www.campusfiresafety.org

November 7-11

FCIA Firestop Industry Conference
& Trade Show
Isle of Palms, SC
www.FCIA.org

November 29-Dec. 2

CONSTRUCT Canada
Toronto, CA
www.constructcanada.com

THE ADVENTURES OF **APEX** THE FIRESTOPPER™

IN THIS ISSUE,
WE PAY A VISIT TO
"APEX THE HISTORY
PROFESSOR" ...



HEY THERE! LET'S
TAKE A LOOK AT THE
HISTORY OF FIRE
PREVENTION. ALONG
THE WAY, WE'LL TAKE
A LOOK AT BOTH
"ACTIVE" & "PASSIVE"
METHODS OF FIRE
PROTECTION.



IN ANCIENT ROME, THE FIRE CHIEF WOULD
HAGGLE OVER THE PRICE OF HIS SERVICES...
AND IF NO DEAL WAS REACHED,
THEY WOULD LET THE BUILDING BURN!



IN OTHER TIMES, BUILDINGS THAT WERE IN
THE PATH OF THE FIRE WOULD BE
DEMOLISHED TO KEEP THE FIRE FROM
SPREADING! WOW!, THAT CAN GET EXPENSIVE!



...AND IF YOU WANTED TO FIGHT FIRE
USING A MODEL OF INEFFICIENCY...
BREAK OUT A BUCKET BRIGADE!



THESE ARE ALL EXAMPLES
OF WHAT WE CALL "ACTIVE"
FIRE PROTECTION. THE BIG
DRAWBACK BEING THAT YOU
ACTUALLY HAD TO WAIT FOR
A FIRE TO BREAK OUT
BEFORE ANY
OF THESE COULD
BE USED.



THAT'S ALL WELL AND GOOD AND
WE SUPPORT ACTIVE SYSTEMS.
BUT, WE AT APEX FIRESTOP BELIEVE
THAT "PASSIVE" FIRE PROTECTION,
USING FIRE AND SMOKE RESISTANCE,
DEMONSTRATED BEAUTIFULLY BY
THIS SNOOZING MAN HERE, KEEPS
PEOPLE SAFE TOO.



BECAUSE, YOU SEE, PASSIVE FIRE
PROTECTION MEANS TAKING MEASURES
BEFORE A FIRE STARTS! GET THE PICTURE?
BECAUSE WHEN YOU CHOOSE APEX FIRESTOP...™

"THE FIRE STOPS HERE!"

APEXFIRESTOP.COM
713-690-4725



**FM 4991 APPROVED
FIRESTOP CONTRACTOR**

RECTORSEAL





Specified Technologies Inc.

THE FIRESTOP AUTHORITY

An ISO9001 Company

GLOBAL FIRESTOP SOLUTIONS

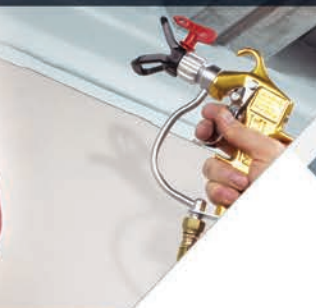
FOR AN EVOLVING WORLD



CABLE TRAY - FIRESTOP MORTAR & PILLOWS

PLASTIC PIPE - FIRESTOP SEALANT

TOP OF WALL - SPEEDFLEX® & FIRESTOP SPRAY



EZPath
FIRE RATED PATHWAY



OVER 1,300 PUBLISHED UL® SYSTEMS

Expert Technical Support
Best-In-Class Customer Service
Proudly Made in USA



WWW.STIFIRESTOP.COM

Celebrating 25 Years of Firestop Excellence