

Volume 7, No. 2

Spring 2011

The Magazine of Effective Compartmentation



# Life Safety DIGEST

**Inside this issue:**

**How to Select a Firestop Contractor**

**ABC's of Total Fire Protection**

**Protecting Service Window Openings**

**Openings in Fire-Resistance-Rated Construction Part 1**

**Putting the "M" in DIIM**



Project: New York Fire Department, Engine Co. 239 Firehouse

Location: Brooklyn, NY

Architect: Beyhan Karahan

Products: Pilkington Pyrostop® fire-rated glass  
and Fireframes® Heat Barrier Series frames



HEY,  
IF IT'S GOOD ENOUGH  
FOR THEM...

© Pilkington

## Pilkington Pyrostop®

For protection against flames, smoke and heat transfer choose Pilkington Pyrostop® fire-rated and impact safety-rated glazing material. With a fire rating of up to 2 hours, it's the clear alternative to solid walls. After all, who knows more about protecting people and valuables?

© 2011 Technical Glass Products. Pilkington Pyrostop is a registered trademark of Pilkington plc. Technical Glass Products, One Source, Many Solutions and Fireglass are registered trademarks of Technical Glass Products.



fireglass.com | 800.426.0279



**FCIA Board of Directors**

**Bob Hasting**, 2011 President  
Specialty Firestop Systems, Inc., Vancouver, WA

**Jodi Clem**, Vice President, 2012 President Elect  
PREVENT, Inc., Livermore, CA

**Scott Rankin**, Secretary  
Pyro-Stop, LLC, Philadelphia, PA

**Gary Hamilton**, Treasurer  
Hamilton-Benchmark, Inc., St. Francis, WI

**Eric Keeton**, Director  
Dalton Maintenance, Inc., Medway, OH

**Don Murphy**, Director  
PPMI Firestop, Inc., Indianapolis, IN

**Ken Slama**, Director  
National Firestop LTD, Winnipeg, MB, Canada

**Randy Bosscawen**, Past-President  
Multicon Fire Containment, Columbus, OH

**Bill Hoos**, Past-President  
JHC Firestop, Inc., Boonton, NJ

**Bill McHugh**, Executive Director  
Firestop Contractors International Association  
Hillside, IL

**Aedan Gleason**, Chair, Advisory Board  
Gleason Powers, Inc, Franklin, MA

Subscription information:  
To subscribe, visit [www.fcia.org](http://www.fcia.org), click on Life Safety Digest, subscribe. For article submissions, information, contact FCIA at 708-202-1108 or e-mail [info@fcia.org](mailto:info@fcia.org). To unsubscribe, email [info@fcia.org](mailto:info@fcia.org), unsubscribe to Life Safety Digest.

Life Safety Digest, Volume 7, No. 2, is published quarterly by the Firestop Contractors International Association. Information has been obtained from sources believed to be reliable. However, because of the possibility of human or mechanical error by our sources, the Firestop Contractors International Association does not guarantee the accuracy or completeness of any information and is not responsible for any errors or omissions of for the results obtained from use of such information. The publisher reserves the right to censor, review, edit, reject or cancel any materials not meeting the standards of Life Safety Digest.

**Editorial Contributions:** You are invited to share your expertise and perspectives. Before writing, contact FCIA at [info@fcia.org](mailto:info@fcia.org) for writing guidelines & policies.

**Advertising Contact:** Contact FCIA's Office for information. 708-202-1108; [angies@fcia.org](mailto:angies@fcia.org)

**Reprints:** Life Safety Digest Magazine limited quantity reprints are available from FCIA headquarters; 1-100- \$.95/issue; 101-500 - \$.90/issue ; 501-1000 - \$.80/issue; 1000+ - \$.70/issue. All shipments FOB 4415 W. Harrison St., Hillside, IL 60162.

**Online:** Archived Life Safety Digest available at <http://www.fcia.org> , Magazine.

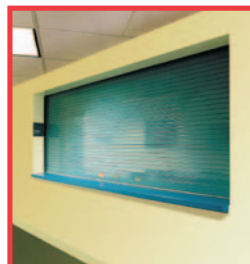
**On the Cover:**  
PHOTO: UC-Davis-Atrium – Fire Rated Glazing in atriums provides clear view and fire resistance. SAFTI photo.

# Life Safety DIGEST

## Contents



PG 6



PG 11



PG 20

**Editor's Message..... 5**

**How to Select a Firestop Contractor ..... 6**

*By Don Murphy*

**ABC's of Total Fire Protection ..... 8**

*By Jeff Griffiths*

**Protecting Service Window Openings in Educational and other Occupancies ..... 11**

*by John Polchin*

**Openings in Fire-Resistance-Rated Construction Part 1 ..... 14**

*by Ronald L. Geren, AIA, CSI, CCS, CCCA, SCIP*

**Putting the "M" in DIIM ..... 20**

*By Aideen Gleason*

**Industry News ..... 24**  
**Code Corner**  
**Industry Calendar**



# HILTI

## Firestop Systems



**PLATINUM**

**Firestop leave it to  
the professionals.**

**Hilti. Outperform. Outlast.**

When it comes to Life Safety and code compliance, you can count on the elite team of Hilti Accredited Firestop Contractors (HAFSC). Extensive, manufacturer's-direct training and ongoing field audits by the large network of Hilti Fire Protection Specialists and Independent HAFSC help limit your liability and offer you peace of mind. Please call your local Hilti representative or Hilti Center to find your local HAFSC. You can visit [Hiltifsc.com](http://Hiltifsc.com) for more details.

# Editor's Message

Although recent discussion in the press about Educational Occupancies has been about teacher compensation and pupil performance, there's a lot more that goes into a successful teaching environment.

A big part of a successful education has a lot to do with who is standing at the front of the room teaching the students. However, there also needs to be a willing student, a supportive family, and acceptance of the vision that the education brings results to the student who invests themselves into trusting and being a good customer of the educational system.

The "Learning Environment" has been studied with experiments on various classroom environments for decades. Optimal class sizes, open plan classrooms (1970s), soundproof compartments (today), and various classroom styles have been tried to improve the learning experience for the student. One thing is for sure: most teachers do not want disturbance from the next room or corridor, because that disrupts their classroom.

How does fire-resistance-rated construction and fire protection fit into this story? Installing a one- or two-hour fire barrier or one-hour smoke barrier between the classroom and corridor or from classroom to classroom means the separation wall will extend from the floor below to the next fire-resistance-rated or non-rated assembly above.

Fire-resistance-rated wall construction adds effective compartmentation features...quantified fire resistance, sound transmission factors, plus numerical smoke-resistant properties, and more when properly designed, installed, inspected and maintained.

Plus, security may be enhanced since intruders would need to break the wall above the ceiling to get into an adjacent space. Without the fire or smoke barriers, the wall stops at the false ceiling tile, making it easy for anything – sound, smoke, fire, air and the particulates carried with it, plus people - to jump rooms.

Isn't it costly to build walls like this? It depends. Since the labor is already installing a wall, doors, glazing, ductwork...and delivery trucks are already loaded with materials, the additional labor investment in fire-resistance-rated or smoke- / sound-resistant systems is incremental during initial construction.

It's just completing the top of the wall assembly, swapping fire doors and hardware for non-rated, adding door closers, with fire-rated glazing and dampers. The labor, transport of materials, is already paid for... because a wall is being built anyway, with doors and wall materials all being handled. There is labor expense, but the labor force doesn't have to remobilize, bring tools, find the area to work in, etc. The big "add" is the cost of materials when planning these walls and building during initial construction.

Adding a "top" to the wall later to make it fire, sound- or smoke-resistant is not so easy. Pipes, ducts, ceiling tile, are all in the way of workers and materials, bringing productivity to a standstill. Ever try to build a wall through a ceiling tile?

Fire safety starts before the building is built, and is supported during the building's life cycle. FCIA supports total fire protection through proper design, installation, inspection, and maintenance / management of the systems installed.

Through all these features working together, safe buildings for all are the result. When constructed initially with these features, fire-resistance-rated and smoke-resistant effective compartmentation – these systems provide one part of a safe building.

## FCIA Editorial Committee

**Aedan Gleeson,**

Chair, FCIA Editorial Committee

**Mike Dominguez,**

Past President, Miami, FL

**Don Murphy,**

Past President, Indianapolis, IN

**Scott Rankin,**

FCIA Editorial Committee

**Bill McHugh,**

Executive Director

**Efficient Design and Quality Construction  
makes Albion the only choice for**

## **Professional Firestop Tools.**

**Bulk**

**Bulk/sausage**

**Sausage**

**Cartridge**

- Albion has available a wide variety of bulk, sausage and cartridge guns
- Metal and plastic nozzles
- Accessories, bulk loaders and parts

New 96 page catalog on request

Manufacturers of manual, battery, and air-powered dispensing tools and accessories for the most demanding professional and industrial applications.

**Albion**  
DISPENSING SOLUTIONS  
[www.albioneng.com](http://www.albioneng.com)

**ALBION Engineering Co.**  
1250 N. Church Street  
Moorestown, NJ 08057-1102  
856-235-6688 FAX: 800-841-7132  
E-MAIL: [service@albioneng.com](mailto:service@albioneng.com)



# How to Select a Firestop Contractor

by Don Murphy

Educational building occupancies protect huge assets in communities. The buildings and property value alone is often one of the biggest pieces of a community balance sheet that needs to be protected all day when these structures are used.

Schools wind up with lots of different occupancy types depending on the occupants in them and the use of the structure. Some educational buildings will have assembly (theaters, sports arenas, track, pools) to business (offices), to residential (R2 dorms), and storage (S1 miscellaneous, S2 low hazard) classifications. Some facilities could be both educational and institutional, (I3 reformatories).

As required by code and specifications, firestop products are installed in buildings, then become firestop systems, when installed to the tested and listed system from leading approved agencies

like Underwriters Laboratories, Intertek, and FM Approvals. These products, if installed improperly, may not protect lives when called upon by fire.

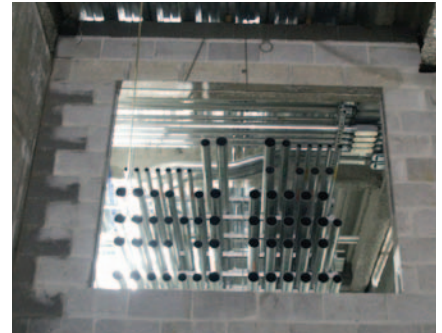
There are sometimes significant amounts of firestop materials to be installed to become firestop systems in educational occupancies.

Penetrations through fire-resistance-rated walls and floors made by pipes, cables, ducts, bus ducts, cable trays, and more mean firestop systems are needed to protect the integrity of the wall and floor.

How do firestop products get installed to the exacting zero tolerance installation protocol that has been established for decades? Using a contractor who understands the zero tolerance protocol is the only way to get firestopping installed correctly the first time, every time.

Selecting a firestop contractor can make the difference between a safe and effective firestopping application that makes effective compartmentation work, or a complete disaster.

There are important questions to ask a specialty firestop contractor prior to hiring them to install these important products.



Large openings with many penetrating items. PPMI Photo

1. Is firestopping one of the contractors' primary businesses?
2. Insurance protection is important to you, the purchaser. Does the contractor have adequate workers compensation, finished products and general liability insurance as required by local ordinances? Ask for the certificates of insurance and review the coverage and effective dates.
3. Does the firm have experience installing the particular firestop materials and systems submitted on the project?
4. Is the contractor company approved to FM 4991, Standard for Approval of Firestop Contractors, or UL Qualified Firestop Contractor Program? Did the FM 4991 Approved or UL Qualified Firestop Contractor company appoint a person who has passed the FM or UL Firestop Exam as the "DRI?" Ask for the company certificates from Underwriters Laboratories, FM Approvals, *including* the Designated Responsible Individual (DRI) Certificates.



Firestopping can be labeled by contractors who understand the zero tolerance firestop systems protocol. PPMI photo



Specialty Firestop Contractors understand how to install firestop composite sheets to the systems documentation efficiently. PPMI photo

5. Does the contractor belong to the national (FCIA) trade association? These associations provide educational opportunities for employees and workers in many topics (visit FCIA.org, member lists to verify).
6. Is the contractor licensed and bonded?
7. Have you seen a reference project listing of similar projects? Call the contacts.
8. Did the contractor provide a written detailed proposal? Are there specific firestop systems to be used on the project? Do the details actually match conditions expected to occur in the field?
9. Has the contractor selected the right hourly fire-resistance (F) ratings, temperature (T) and air leakage (L-smoke) ratings to meet the scope of work laid out in construction documents?
10. Have you verified the contractors address, Tax I.D. number, and phone and fax numbers?
11. What kind of quality management system and safety program does the firm have in place to protect you and their employees? Do they have any certifications?

12. Who will supervise the work?

These questions you should ask to evaluate a specialty firestop contractor, and they are not exhaustive. Be sure to carefully review proposals and bids for work carefully.

These points are not just for specialty firestop contractors either. Fire doors, fire dampers, fire-rated glazing, along with Firestopping contractors all provide services to return the fire-resistance-rated or smoke-resistant wall or floor to the rating it had before an opening was made for a door, penetrating item, or other services in the building.

As an association, we recommend focusing on the quality and the quantified qualifications that make the firestop contractor capable of performing the scope of work on the particular firestopping project to restore the integrity of the fire-resistance-rated effective compartmentation that keeps people safe in buildings.

*Don Murphy is President of PPMI Firestop, Inc., Indianapolis. Don is current Co-Chair of the FCIA Marketing Committee and a Past President of FCIA. Don can be reached at [don@ppmifirestop.com](mailto:don@ppmifirestop.com).* 🔥

**THE ADVENTURES OF APEX THE FIRESTOPPER**

IN THIS ISSUE, FIRE HAS BROKEN OUT AT A CONSTRUCTION SITE THAT HAS BEEN FIRESTOPPED BY APEX...

FIRE THREATENS TO RUN RAMPANT BUT...

ONCE AGAIN APEX THE FIRESTOPPER IS ON THE SCENE TO "COLLAR" HIS MAN!

FIRESTOP COLLAR

OH NO! IT'S PROPERLY INSTALLED!

UL NO.: C-AJ-2865

- 1.) CONCRETE FLOOR OR WALL (3-HR. FIRE-RATING)
- 2.) PENETRATING ITEM - FRPP PLASTIC PIPE
- 3.) MINERAL WOOL - FIRMLY PACKED...
- 4.) L-RATED SMOKE SEAL - TOOLED...
- 5.) COMPETITIVELY PRICED FIRESTOP COLLAR - FASTENED...

ANOTHER FIRE STOMPED OUT WITH THE HELP OF APEX!

**THE FIRE STOPS HERE!**

FMG 4991 APPROVED FIRESTOP CONTRACTOR

WWW.APEXFIRESTOP.COM  
713-690-4725



# The ABCs of Total Fire Protection and Fire-Rated Glass in Schools

by Jeff Griffiths

Stop, drop and roll ... it is a directive learned by thousands of school children. It was the 1958 fire at Chicago's Our Lady of the Angels elementary school that killed 87 children and three nuns that caused Americans to get serious about fire prevention and safety in schools.

Thanks to code changes and fire-safety education launched in the 1960s, the number of fatalities from school campus fires has dropped significantly. Still, school fires persist. (See Campus Fire Facts box.) K-12 school officials place nearly 15,000 calls a year for help in battling campus fires. While fatalities are rare, the rate of injuries from school fires is higher than in either homes or in non-residential structure fires. School property damage is estimated at over \$100 million a year.

The next step in limiting injury and damage caused by school fires is to adopt a total fire protection approach that combines active and passive fire

protection systems. Most people are aware of active fire protection measures, like fire alarms, sprinklers, and fire extinguishers that help detect and suppress fires. However, most people overlook the value of passive fire and smoke protection provided by compartmentation strategies inherent in prevailing code requirements.

## Passive fire protection is reliable

For decades, the focus of fire safety has been on active fire-protection measures. These active systems must be installed and maintained in compliance with various NFPA standards and IBC model codes. Unfortunately, active systems can fail due to poor maintenance, sabotage or natural disaster. In a 2009 Campus Safety Magazine survey, 58% of K-12 officials and 53% of university officials cited system maintenance as their number one concern.

## Your Fire Safety Inspection is Due!

...are YOU ready?

**SAFE ✓ CHECK**® ensures YOUR facility is Compliant by performing a comprehensive...

- Damper Inspection, Including Any Necessary Repairs.
- Fire Stop Survey and Application of Proper UL Systems.
- Fire Door and Frame Inspections.

**SAFE ✓ CHECK**® provides our customers with...

- Customized Virtual Database.
- Digital Photographs Upon Request.
- Training for Employees In Latest ICRA Requirements.

Member: FCIA, NFPA, IAFC,  
SPFE, HFMA, WBENC, LSO

Better than sorry!  
**SAFE ✓ CHECK**®



Call (866) 723.8911

[www.safechecklls.com](http://www.safechecklls.com)



# The Clear Solution

Advanced fire rated glass with superior clarity and performance for every application.



SuperLite II-XL 60-120



SuperLite II-XL 45



SuperLite I-XL

## SuperLite

FIRE RATED GLASS

# SAFTI**FIRST**<sup>TM</sup>



Register online for "Designing with Fire Rated Glass" and receive 1 AIA LU/HSW credit



Proudly made in the USA.



SuperLite I



SuperLite X-90

WWW.SAFTI.COM • 888.653.3333



Fire Rated Glazing allows clear view and fire resistance. SAFTI Photo

This is precisely why incorporating fire-resistance-rated and smoke-resistant compartmentalization measures is so important. Fortunately, passive fire protection, despite its name, is always at work. Compartmentation refers to the strategic use of fire-resistance-rated materials in building construction and remodeling that, when installed to the tested and listed system design, ensure the safety and safe egress of building occupants.

The components of compartmentation include walls made of gypsum, masonry, fire-resistive glazing, fire dampers, and firestop systems, fire-resistance-rated floors, and the supporting construction as well. These fire-resistance-rated building materials that become systems when installed properly, create fire barriers, firewalls, fire partitions, and smoke barriers that form compartments, or occupancy separations, that contain flames, heat and gases at the room of origin so that building occupants may exit the building safely or protect themselves when a “defend in place” strategy is used.

Perhaps the most important benefit of incorporating compartment fire protection is the fact that fire-resistance-rated systems are the best defense against dangerous radiant heat - invisible electromagnetic waves that travel at the speed of light with little resistance. When these waves strike an object, they are absorbed and their energy is converted to heat. If the object is a combustible material, a fire will start when the material’s ignition temperature is reached. Radiant heat is extremely dangerous to building occupants since it can quickly reach a level that causes unbearable pain, followed rapidly by second degree burns, preventing safe egress.

Some jurisdictions allow sprinklers to provide the sole fire protection in school corridors, allowing students and faculty to be exposed to even greater risks. However, a far more reliable strategy is one that combines the benefits of both active and passive systems.

For example, by using fire-resistive glazing as part of a fire-resistance-rated wall assembly to create occupancy separations that protect people and property from radiant heat, designers can introduce day-lighting

and expanded visibility strategies into school corridors to keep them safe for egress while preserving the fire-resistance integrity of school buildings.

Until 25 years ago, architects could only select conventional fire-resistance-rated systems that use gypsum and masonry to meet the one- and two-hour fire-resistance rating wall criteria. With the advent of technologically advanced fire-resistive glazing that performs like a transparent wall, they can now incorporate clear vision in their designs while still meeting the fire and safety requirements of the code.

The bottom line: School officials can best ensure that campus fires are quickly detected, suppressed, contained, and that people can safely leave a burning building by focusing on both active and passive fire-resistance-rated compartmentation in school buildings of any type, primary through collegiate.

*Jeff Griffiths is Director of Business Development at SAFTI-First. Jeff is part of a management team on a mission to serve their customers and the general public by providing innovative fire-rated products that protect lives. 🔥*



Fire Rated Glazing can be decorative. SAFTI Photo

### Campus Fire Facts

- **40%** of K-12 schools, universities and hospitals have experienced one to three fires in the last three years. (Campus Safety Magazine 2009 survey)
- **36%** of K-12 schools, universities and hospitals have reported four to 20 fires in the last three years.
- Annually, there are **14,300** fires in non-adult schools (daycare through high school) resulting in 122 injuries and \$103.6 million in property damage. (FEMA, 2002)
- **A majority** of K-12 campus fires start outdoors either on school property or by wildfire. (FEMA, 2002)
- There are **750 structure fires** annually in college classrooms and adult education centers. (NFPA)
- Among the 18 million college students enrolled in 4,100 colleges and universities nationwide, 140 students have died in fires in the last nine years. (Campus Firewatch)



# Protecting Service Window Openings in Educational and Other Occupancies

by John Polchin

## Rolling Counter Fire Doors

Rolling counter fire doors are commonly used to protect service window openings in educational and healthcare facilities, hospitality and other public spaces. These important doors protect and separate sensitive operational areas from assembly areas, providing effective compartmentalization with fire and smoke resistance opening protection.

Advantages of rolling counter fire doors in educational occupancies include compact coiling into a small overhead space for ease of door storage when opened.

Typically, counter fire doors can be labeled for 3, 1-1/2, 1 or ¾ hours for use in fire resistance rated gypsum wallboard, concrete masonry or even steel walls.

These doors are made to meet exact opening size requirements. The doors are available in stainless steel or prefinished galvanized steel. The doors are designed to include an automatic closing and governing mechanism to ensure safe door closure during a fire emergency event, but they are also designed for daily use to provide opening security. The doors can be provided to meet the customer's operational preference of either convenient motor operation or manual push-up, chain or crank operation. When opening aesthetics

are desired, there is even a concealed tube motor operator option in which the operator is mounted in the unit's shaft assembly, eliminating the need for an exposed operator and/or a bulky motor cover. Automatic closing can be activated by local detectors or the buildings central alarm system. Local fuse links can also be provided to activate automatic closing where allowable by the local Authority Having Jurisdiction. Cylinder or slide bolt locks can be provided to secure the door in the closed position. Annunciators can be used to provide a visual and/or audible advanced warning when the fire door is about to close. These are activated by the alarm signal and can be supported by a battery back-up device to function during a power outage.

Typical Counter Fire Door Components Include:

- **Door Curtain**

Comprised of interlocking roll formed flat-faced horizontal slats with galvanized steel end locks riveted to ends of alternate slats to maintain curtain alignment and prevent wear.

- **Bottom Bar**

Reinforcing member attached to the bottom of the curtain with a vinyl astragal seal to cushion the contact point on the counter.

- **Guides**

Side rail assemblies constructed of bent steel that bolt to the wall, support endplate brackets and shaft and the entire weight of the unit. Full height mounting support is required where the guide attaches to the wall.

- **Brackets**

Cold rolled steel plates that bolt to guide assembly and support the counter balance shaft and door curtain.

- **Counterbalance Shaft**

A 3" minimum diameter steel pipe assembly that supports the curtain and normally contains counterbalance torsion springs for assisting operation.

- **Hood**

A protective sheet metal enclosure for the coiled curtain that provides fire resistance at the head of the unit and keeps the brackets rigid and square.



Rolling Counter Door - Cornell Photo



Rolling Fire Doors can be single, or side by side separated by fire resistance rated assemblies. Cornell Photo

- **Operation**

Motor, tube motor, hand crank, hand chain or manual push-up operation is available. Doors operate by rotating the shaft gear end. The opposite end of shaft applies spring tension and is equipped with a spring adjusting wheel.

- **Optional Integral Frame & Sill**

For food service openings or when the aesthetics of an integral frame, sill and counter fire door is desired, an integral frame counter fire door unit can be specified and provided. Integral frame units must

be specified up front, as standard units cannot be converted to include an integral frame.

### **Labeled Smoke and Draft Control - "S" Rating**

For protection against the loss of life in addition to property protection from fire, smoke and draft control protection can be obtained with units that are tested and labeled per UL 1784. When labeled smoke and draft control is specified, the units will be provided with perimeter seals to impede the amount of smoke and gases that can pass through the opening. The door will be provided with an additional label or marking to indicate that the door is labeled for smoke and draft control in addition to fire control. The UL 1784 test protocol provides suitability for use in meeting building code and NFPA 105 air leakage criteria requirements. The rating for smoke is optionally offered, and must be requested of the manufacturer through specification direction to the contractor. Smoke labeled doors require activation from local detectors or a central alarm system so the door will be in the closed position long before fire is present at the opening to provide its designed smoke protection.

Counter fire door construction can be provided for units as large as 16' wide and up to 10' high. They can come to rest on a countertop or run full opening height and stop at the floor. It is important to have



**NATIONAL  
UNION INSULATION  
CONTRACTORS  
ALLIANCE  
(NUICA)**

The NUICA supplies union workers to install firestop materials across the country and Canada.  
Contact NUICA for qualified contractors in your area.

Our members hire union trained workers from the International Association of Heat and Frost Insulators and Allied Workers who train the workers in safety, installation skills, and blue print reading skills.

Our contractors supply a single source solution to the general contractor with one contractor, one material, one responsible party, and one labor source trained in the application of Firestop materials and systems.

**TEL: 847-619-9528 FAX: 847-619-9556**  
1515 E. Woodfield Road, Suite 118, Schaumburg, IL 60173



countertops fire resistance rated for continuity as well. Several manufacturers offer UL tested and labeled 1-1/2 hour rated plastic laminate or stainless steel countertops.

Like most life safety devices, periodic testing and maintenance is required for rolling fire doors. NFPA 80 mandates testing of fire door automatic closing systems in Paragraph 5-2.1, '...not less than annually, and a written record of the inspection shall be kept for inspection by the Authority Having Jurisdiction.' In Paragraph 5-2.3, NFPA 80 further explains that 'Functional Testing' be performed by individuals who are knowledgeable about the openings being inspected. Further, NFPA 80 5.2.5 describes requirements for inspection of horizontally sliding, vertically sliding, and rolling doors.

Regardless of the type of fire wall openings in educational occupancies, proper design, installation, inspection and maintenance of fire rated closures must be performed so the system functions properly in a fire emergency. The building occupants, in this case students and teachers, are counting on it!

*John Polchin is Southwest Regional Sales Manager, Cornell Iron Works, Inc., and can be reached at john@cornelliron.com. 🔥*



Rolling Fire Door in Masonry Construction. Cornell Photo

## INCOMPLETE IS INEFFECTIVE...



**PROVIDING FIRESTOP INSTALLATION & RATED BARRIER RECONSTRUCTION SERVICES**

**FIRESTOP SOLUTIONS**  
 Division of MEDIGAS® Life Safety Group  
*Because Life Matters*

**Main Office**

1655 Sycamore Ave., Bohemia, NY 11716  
 Ph: (631) 563-4040 Fax: (631) 563-4187

**Rochester Office**

2555 Baird Rd., Suite E, Penfield, NY 14526  
 Ph: (585) 662-5914 Fax: (585) 662-5948

**(800) 437-1591**

www.firestopsolutions.com  
 info@firestopsolutions.com



**Underwriters Laboratories**  
 Qualified Firestop Contractor Program



**APPROVED**  
 4991 Accredited



# Openings in Fire-Resistance-Rated Construction

## Part 1

by Ronald L. Geren, AIA, CSI, CCS, CCCA, SCIP

**Editors Note:** *Fire-resistance-rated construction is specified for educational occupancies even if the code does not require it. In dormitories, school buildings, mechanical and electrical rooms, and other areas, these important systems are used.*

*Fire-resistance-rated corridors, classroom separations, are used for fire and life safety. In Educational Occupancies, requirements for these important fire, sound, security air and smoke compartmentation components mean saving lives, and lots of them.*

“The act or an instance of becoming open or being made to open.” “An open space serving as a passage or gap.” “An unfilled job or position; a vacancy.” “A breach or aperture.”<sup>1</sup>

The word “opening” has many meanings, as indicated above. However, with its many specific code related definitions, it is surprising that the *International Building Code* (IBC)<sup>2</sup> does not provide its own definition of “opening.” So, in the absence of a code-specific definition, the latter definition from the above list is very apt when referring to doors, windows, and other “breaches” in fire-resistance-rated assemblies.

Fire-resistance-rated assemblies (*i.e.* fire walls, fire barriers, fire partitions, smoke barriers, and horizontal assemblies) have been tested to restrict the spread of fire; but openings, such as doors and windows, located in these assemblies, introduce points of weakness. Therefore, openings in a fire-resistance-rated assembly must afford some protection to maintain a minimum level of fire resistance throughout the extent of the assembly.

The IBC establishes requirements for openings in Chapter 7 in three locations. The first location is Section 705.8 for openings in exterior walls; the second location is Section 712.8 for floor doors in horizontal assemblies; and finally, the third location is Section 715, which is titled “Opening Protectives”—the primary location for opening requirements.

### Standards for Openings

In order for an opening to be used in a fire-resistance-rated assembly, the opening must be tested

in accordance with the standards indicated in the IBC based on type of opening.

The IBC defines three types of openings: the fire door assembly, the fire window assembly, and the floor fire door assembly, which is used only in the horizontal position. The use of the word “assembly” with each of these terms indicates that it includes all components necessary for a complete opening, such as frames, hardware, glazing, and other accessories.

For side-hinged and pivoted swinging doors, the applicable test standards are National Fire Protection Agency’s (NFPA) 252, *Standard Methods of Fire Tests of Door Assemblies*, or Underwriters Laboratories (UL) 10C, *Positive Pressure Fire Tests of Door Assemblies*.

Other doors are required to be tested in accordance with either NFPA 252 or UL 10B, *Fire Tests of Door Assemblies*. The positive pressure requirement for fire door assemblies was introduced in the 1997 Uniform Building Code after much debate and has remained a requirement in the IBC. It was expected that the hose stream requirement for fire doors would be eliminated from test standards if positive pressure was incorporated, but the hose stream test (discussed in the next paragraph) has remained in U.S. fire door test standards. UL 10C integrates the positive pressure requirements into the test standard; however, NFPA 252 does not, so the IBC requires that the neutral pressure plane be moved to 40 in. or less above the sill after five minutes into the test. The positive pressure requirement provides a more realistic condition experienced by fire door assemblies during an actual fire event (See Figure 1).

The hose stream portions of the UL 10C and NFPA 252 tests are not indicative of an assembly’s ability to withstand firefighting operations, but to test the structural durability of the assembly through thermal shock from the cool water and the impact and scouring effect of the water blast against the assembly. Fire door assemblies in walls of corridors and smoke barriers are not required to pass the hose stream test of either standard.



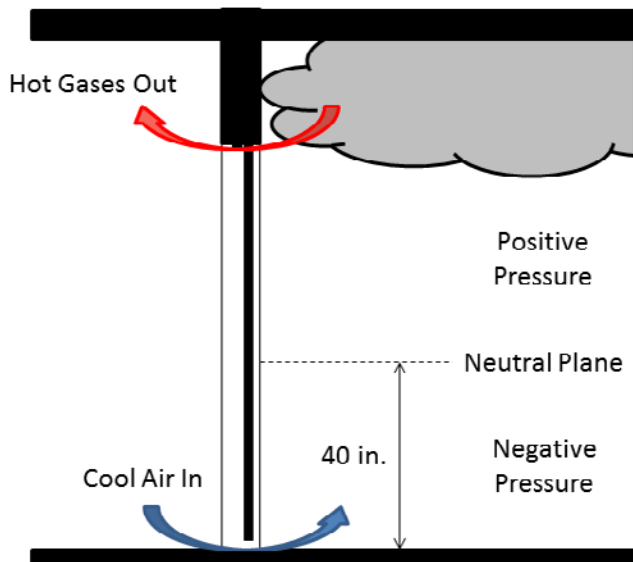


Figure 1 - Positive Pressure Requirement

An exception to the tests above are those doors that have been tested in accordance with UL 10A, UL 14B, and UL 14C. The doors applicable to these standards are tin-clad fire doors usually constructed of a wood core with sheet metal applied to faces and edges. Historically, tin-clad doors were often associated with old warehouses, and may be of the swinging, horizontally sliding, or vertically sliding types. Even so, some manufacturers continue today to fabricate doors of this type.

Another exception to the door testing requirements is for floor fire door assemblies. Doors of this type are required to be tested in accordance with NFPA 288, *Standard Methods of Fire Tests of Floor Fire Door Assemblies Installed Horizontally in Fire Resistance-Rated Floor Systems*. Where openings are needed in a fire-resistance-rated horizontal assembly, the floor fire door can be a solution. Floor doors are subject to fire exposure that is different from that experienced by standard vertical fire doors, such as the lack of differential pressure along the plane of the door surface and exposure to higher temperatures from the rising heat.

For fire window assemblies, the required tests are either NFPA 257, *Standard on Fire Tests for Window and Glass Block Assemblies*, or UL 9, *Fire Tests of Window Assemblies*. The only exceptions to these standards are wired glass and glazing complying with the requirements of ASTM E 119, *Standard Test Methods for Fire Tests of Building Construction and Materials*, or UL 263, *Fire Tests of Building Construction and Materials*. The latter exception will be addressed in detail in Part 2 of this article. Like fire door assemblies, fire window assemblies are also required to be tested under positive pressure, but only within 10 minutes of test start and

at a height that leaves two-thirds of the window above the neutral plane.

## Fire Door Assemblies

The required fire protection rating of a fire door assembly is based upon both the rating and the type of fire-resistive assembly in which the fire door assembly is located. Like fire-resistive assemblies, the fire protection ratings for fire door assemblies are also given in hours. Fire protection ratings are provided in Table 715.4 of the IBC.

Fire door assemblies, at a minimum, must be provided with a label complying with the requirements of NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, and shall bear the name of the manufacturer or the manufacturer's traceable identification number, the name or trademark of the third-party inspection agency, and the fire protection rating (See Figure 2). Frames for fire door assemblies are also required to have a label, but it is not required that the fire protection rating be included.

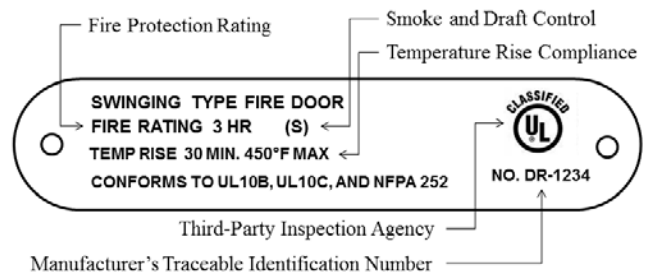


Figure 2 - Fire Door Label Example

In addition to controlling the spread of fire, fire door assemblies must also control drafts and the passage of smoke. To measure a fire door assembly's performance in these areas, the assembly shall be tested in accordance with UL 1784, *Air Leakage Tests of Door Assemblies*. New in the 2009 edition of the IBC is the basic acceptable performance level with which fire door assemblies must comply. Doors complying with the smoke and draft control requirements shall be identified with an "S" on the required label.

If a door that requires a fire protection rating is larger than the fire door assembly that was tested, then the required label mentioned earlier will need to indicate the door is oversized. Another option is to have an approved testing agency provide a certificate of inspection attesting to the fact that the door is constructed in the same manner as the tested fire door assembly

Fire door assemblies located in exit enclosures and exit passageways are required to minimize the transmission of heat from the exposed side through the door to the unexposed side, thus reducing the amount of radiant heat occupants may experience while egressing through the exits. The IBC requires that the temperature rise on the unexposed surface of the fire door assembly cannot exceed 450°F above the ambient temperature at the end of a 30-minute period.

Fire door assemblies that are required to comply with this requirement must have that shown on the required labels (See Figure 2). Further, if glazing in the fire door assembly exceeds 100 in.<sup>2</sup>, then the glazing must also pass the temperature rise criteria. Buildings that are equipped throughout with an automatic sprinkler system in accordance with either NFPA 13 or NFPA 13R are not required to comply with either temperature rise provision.

For obvious reasons, the IBC precludes the use of louvers in fire doors. However, UL provides listings for fire door louvers used in fire doors with fire protection ratings up to 1½-hour. UL requires that such louvers be tested in accordance with UL 10B or UL 10C—the same tests to which fire door assemblies are subjected. With regard to the specific prohibition in the IBC, designers should obtain approval from the building official before incorporating a UL-listed louver into a fire door assembly.

In fire walls, the area of fire door assembly openings is limited to 156 ft.<sup>2</sup> unless the buildings on each side of the fire wall are sprinklered throughout in accordance with NFPA 13—NFPA 13R systems are not allowed that exception. Additionally, the aggregate width of openings on any floor level cannot exceed 25% of the overall length of the fire wall.

Glazing in fire door assemblies is permitted, but some restrictions do apply. According to NFPA 80, glazing is permitted when tested as part of the fire door assembly. The IBC indicates that glazing shall have a fire protection rating equal to the rating required for the fire door assembly. The size of glazing in a fire door assembly is limited by NFPA 80 and the IBC.

NFPA 80 limits the area of glazing to that tested as part of the fire door assembly. However, ¾-hour doors are limited to a maximum area of 1,296 in.<sup>2</sup> with a maximum dimension not exceeding 54 in. Additionally, in three-hour doors, NFPA 80 limits the glazed area to a maximum of 100 in.<sup>2</sup>. The IBC further restricts glazing to 100 in.<sup>2</sup> in 1½-hour fire door assemblies that are installed in fire barriers.

Glazing used in fire door assemblies shall be permanently labeled with a four-part identification code.

The first part of the identification code is the letter “D,” which indicates that the glazing is suitable for a fire door application and has been tested in accordance with NFPA 252.

The second part is either an “H” or “NH,” which indicates that the glazing has passed or not passed, respectively, the hose stream requirements of NFPA 252.

The third part is either a “T” or “NT,” which indicates the glazing complies or does not comply, respectively, with the temperature rise requirements of the IBC. And finally, the fourth part is the fire protection rating in minutes.

Thus, an identification code such as “D—H—NT—120” translates into glazing suitable for a 2-hour fire door that has passed the hose stream test, but has not passed, or was not tested for, the temperature rise requirement.

Glazing utilized in fire door assemblies must also comply with the safety glazing requirements of the IBC. In Chapter 24 of the IBC, the code requires that glazing in doors comply with the requirements for Category I glazing as established by test in accordance with the Consumer Product Safety Commission (CPSC) 16 CFR 1201, *Safety Standard for Architectural Glazing Material*. Category I safety glazing will withstand a 100-lb. weight swung from a pendulum at a distance of 18 in. from the glass surface. If the area of glazing exceeds 9 ft.<sup>2</sup>, then the glazing must comply with Category II requirements, which increases the distance of the weight in the test to 48 in. from the glass surface.

A discussion on fire door assemblies would not be complete without addressing door hardware. A fire door assembly is required to have a latch that will secure the door when closed, preventing passage of smoke and fire into the unexposed side. But a latch would be useless if the fire door assembly is allowed to remain open. Therefore IBC Section 715.4.8 requires that fire door assemblies be provided with closers that are either automatic- or self-closing, unless they are installed in walls separating sleeping units in Group R-1 occupancies.

Generally, “self-closing” requires the use of standard door closers that will close and latch the door when released. “Automatic-closing” usually includes devices such as magnetic door holders that release doors when triggered by an alarm situation. However,



**Where Approved Safety Matters...**

**BEWARE OF IMITATIONS**  
Look for the **FIREMASTER** Brand

**FIREMASTER®**

**The Original, The Leader, and still The Best!**

FastWrap® XL, another innovation from Thermal Ceramics, is a thin (1-1/2" thick), lightweight (6pcf), and flexible duct wrap material.

- Fire tested and UL listed for 1 and 2 hour fire protection for grease duct and HVAC duct enclosure applications
- Non-Combustible, 2000°F rated insulation
- Does not shrink during fire conditions
- Passes ASTM E2336 test standard required by the 2006 IMC and NFPA 96

**Thermal Ceramics**  
Insulating Our World  
northamerica@thermalceramics.com  
www.thermalceramics.com

Section 715.4.8.2 states that automatic-closing fire door assemblies “shall be self-closing in accordance with NFPA 80.” Therefore, the language of the IBC seems to limit all fire door assemblies to the “self-closing” type, even though NFPA 80 permits the use of “automatic-closing” fire door assemblies.

But Section 715.4.8.3 identifies where smoke-activated, automatic-closing fire door assemblies may be installed. These locations include doors across corridors; doors in smoke barriers, fire walls, fire partitions, and shaft enclosures; as well as in other locations. The actuation of the closer is limited to a 10-second delay after being triggered by a smoke detector or loss of power to the smoke detector or hold open device. Overhead sliding or rolling fire door assemblies are permitted to be actuated by either heat sensitive devices, such as a heat detector or fusible link, or smoke detectors connected to the building alarm system.

Transoms and sidelights that are a part of the frame for a fire door assembly are permitted provided the

fire protection rating of the assembly is ¾-hour or less. For fire door assemblies exceeding a ¾-hour rating, transoms and sidelights must comply with either ASTM E 119 or UL 263.

Glazed units that are not part of a fire door assembly shall comply with requirements for fire window assemblies.

### Fire Window Assemblies

The required fire protection ratings of fire window assemblies are provided in IBC Table 715.5 and are based on the type and rating of fire-resistive assembly in which the windows are installed. For interior construction, fire windows are limited to fire-resistive assemblies that have ratings of 1 hour or less.

Therefore, all fire walls and fire barriers with ratings of 2 hours or more are not permitted to have fire window assemblies. In all cases where fire window assemblies are permitted, the area of a fire window assembly cannot exceed 25% of the

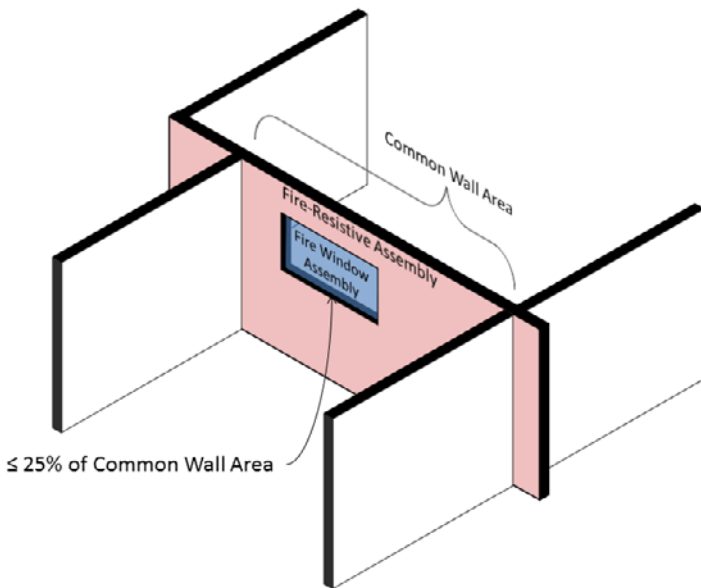


Figure 3

common wall area in any room (See Figure 3). The size of a single pane of glazing in a fire window assembly is

limited to 1,296 in.2 with no dimension exceeding 54 in. unless tested to a larger size, dimension, or both.


Wired glass assemblies are one of the exceptions to the testing requirements for fire window assemblies. Wired glass that is 1/4-inch thick set in steel frames having a metal thickness not less than 0.125 in. are considered to meet the requirements for a 3/4-hour fire window assembly.

The maximum area of wired glass permitted under this exception is an absolute 1296 in.2 with no dimension exceeding 54 in. Wired glass assemblies that have been tested in accordance with the standards for fire window assemblies are permitted to have larger glazed areas and dimensions if tested at those larger sizes.


Like glazing in fire door assemblies, glazing in fire window assemblies are also required to be of safety glazing if located in areas identified in Chapter 24. The only exception is that glazing in fire window assemblies may be tested in accordance with the recently updated ANSI Z97.1, *Safety Glazing Materials Used in Buildings—Safety Performance Specifications and Methods of Test*, in lieu of the CPSC 16 CFR 1201 standard.

# PREMIER FIRESTOPPING


INSTALLATION SPECIALISTS  
COMPLIANCE INSPECTION & CONSULTING





(Before)




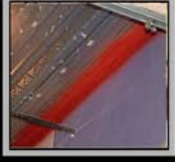
(After)

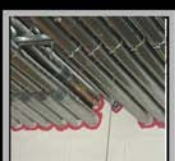













“When it comes to Life Safety, we do it right.”

Founding member of the Life Safety Organization (LSO)





A Division of **FonDelco Inc.**

Tel: 201-796-7040 \* Fax: 201-797-6377

www.premierfirestopping.com

190 Market St. \* P.O. Box 8315, Saddle Brook, NJ 07663











Fire-protection-rated glazing used in fire window assemblies must also be permanently marked with a label or other identification that provides the name of the manufacturer, the test standard, and a two-part identification code. The first part of the identification code is "OH," which indicates that the glazing is suitable for an opening and has passed the hose stream test. The second part of the identification code is the fire protection rating in minutes. Therefore, fire-protection-rated glazing with the identification code "OH—45" indicates the ¾-hour glazing is suitable for openings and has passed the hose stream test.

### Installation

Fire door and fire window assemblies are required to be installed in accordance with NFPA 80. Doors required for smoke and draft control must be installed in accordance with NFPA 105, *Standard for the installation of Smoke Door Assemblies*. NFPA 80 limits the clearance at the bottom of a fire door to a maximum of ¾ in. above the floor and the clearance between the top and vertical edges of the door and door frame is 1/8 in. (± 1/16 in.) for steel doors and a maximum 1/8 in. for wood doors.

### Openings—Part 2

Part 2 of this article will address openings in exterior walls, including calculating allowable area of protected and unprotected openings based on fire separation distance. Also included will be information on alternate methods used to determine fire protection ratings of openings. Part 2 will wrap up with a brief discussion on when a window is not considered an opening.

<sup>1</sup> The American Heritage Dictionary of the English Language, Fourth Edition, 2000, Houghton Mifflin Company.

<sup>2</sup> References to the IBC in this article are for the 2009 Edition.

*About the Author: Ronald L. Geren, AIA, CSI, CCS, CCCA, SCIP, is an ICC Certified Building Plans Examiner, and is the principal of RLGA Technical Services located in Scottsdale, Arizona, which provides specifications and code consulting services to architects, engineers, owners, and product manufacturers. A 1984 graduate of the University of Arizona, Ron has over 26 years of experience with military, public, and private agencies. 🔥*



# Gleeson Powers Inc.



*Gleeson Powers is firmly committed to providing the best possible service and quality to its customers. We take a professional approach and insist on the highest standards of installation and customer service.*

Gleeson Powers, a UL Qualified Firestop Contractor and a Factory Mutual 4991 Approved Firestop Contractor, is one of the leading single-source contractors specializing in the installation of firestop systems and smoke seal products. We provide professional expertise on new or retrofit projects. We specialize in areas such as Medical Facilities (Hospitals and Nursing Homes) as well as Commercial, Industrial and High Rise Residential Buildings.

◆ FIRESTOP SPECIALISTS ◆ SMOKESEAL SPECIALISTS

◆ A FULL RANGE OF UL/FM FIRESTOP SYSTEMS ◆ AIR BARRIER

◆ WATERPROOFING ◆ CURTAIN WALL INSULATION ◆ BUILDING INSULATION



TEL: **508-553-0800** FAX: **508-553-0999**



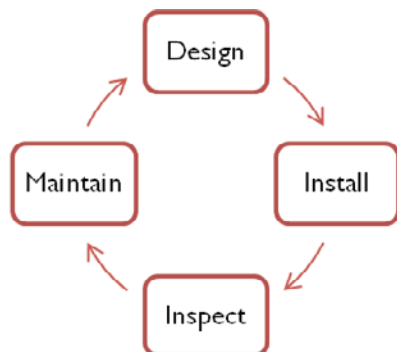
41 Dean Ave., P.O. Box 305, Franklin, MA 02038 [www.gleesonpowers.com](http://www.gleesonpowers.com)

# Putting the “M” in DIIM

By Aideen Gleason

The Firestop Contractors International Association (FCIA) first introduced the concept of Design, Install, Inspection and Maintain/Manage (DIIM) over 10 years ago. Each letter of DIIM is an equally important part of effective and reliable compartmentation in any occupancy, healthcare to university, multi-family, office, education institutional and industrial. Each letter promotes quality and responsibility in the four most important aspects of effective compartmentation. When all four are properly addressed they provide building owners and managers, Authorities Having Jurisdiction (AHJs), regulatory bodies, and contractors with a well-rounded and reliable approach to life safety.

When each letter of DIIM is treated as an equal part of the effective compartmentation puzzle, facilities are properly guarded in the event of a fire.



The DIIM philosophy is furthered above all by the desire for building occupants to be properly safeguarded in the event of a fire. But there are also code requirements, standards, and specifications that have helped in the adoption of the DIIM approach.

FCIA and others interested in promoting reliable passive fire protection work to implement code, standard, and specification changes that will positively affect the DIIM philosophy.

For the “D” design piece, products are tested to become systems to ensure they meet their hourly ratings in accordance with code requirements at testing laboratories such as Underwriters Laboratories and Intertek.

The first “I,” Install, is associated with contractor standards to ensure quality installation of systems. FM Approvals and Underwriters Laboratories have both developed unique programs that require FM 4991 Approved or UL Qualified Firestop Contractors to

undergo firestop knowledge testing, yearly company audits, and other quality assurance reviews to ensure that the install portion of DIIM is addressed and promoted within the installing contractor company.

The second “I,” Inspect, has several standards and code requirements depending on the effective compartmentation one needs to inspect. For firestop surveys and inspections, for example, ASTM E 2174, ASTM E 2393, the Standards for the Inspection of Firestop Systems for Penetrations and Joints and the FCIA’s RPP-2010.1, Recommended Practice for Survey of Existing Buildings provide a blueprint for inspection and survey standards.

Barrier management means reviewing conditions above ceilings to get to fire-resistance rated construction.



Barrier management means reviewing conditions above ceilings to get to fire-resistance rated construction. Gleason Powers Photo

The last letter “M,” Manage/Maintain, is stated in the International Fire Code (IFC) 703.1 code requirement IBC 2009 as reads below:

**703.1 Maintenance.** *The required fire-resistance rating of fire-resistance rated construction (including walls, firestops, shaft enclosures, partitions, smoke barriers, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistive joint systems) shall be maintained. Such elements shall be properly repaired, restored or replaced when damaged, altered, breached or penetrated. Openings made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer openings and holes*



*made for any reason shall be protected with approved methods capable of resisting the passage of smoke and fire. Openings through fire-resistance rated assemblies shall be protected by self-closing or automatic-closing doors of approved construction meeting the fire protection requirements for the assembly.*

This code requirement is an important addition in furthering the DIIM philosophy for effective compartmentation. But with its inclusion in the IBC 2009, what are its implications for practical implementation?

First, it means that fire-resistance rated construction must be viewed as a complete system (McHugh, 2005). *“The required fire-resistance rating of fire-resistance rated construction (including walls, firestops, shaft enclosures, partitions, smoke barriers, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistive joint systems) shall be maintained.”* According to this first sentence, walls, floors, fire & smoke dampers, fire doors, and fireproofing and coatings are all part of fire-resistance rated construction and, as a *whole*, must be maintained.

Taking a complete system approach to passive fire protection can only be accomplished by having a defined process or plan in place to manage the maintenance of fire-resistance rated and smoke-resistant systems.

This management plan must cover each of the above elements and include a comprehensive system of inspection scheduling, procedures to monitor future alterations to an existing system, and education of both staff and occupants as to their responsibility in maintaining passive fire protection (i.e. shutting fire doors, not cluttering corridor space). The process must have support from leadership, facility and other staff



Barrier Management Systems can be portable, used on-site. Gleeson Powers Photo.

members, and contractors. Documentation and correct systems are key.

Lastly, to facilitate a well-defined management plan for these systems, there must be a documentation system in place. There are multiple approaches to document management, and there are pros and cons to each approach.

Traditional approaches include a simple log of inspections and alterations using a paper system. More advanced approaches include Excel spreadsheet documents and possibly Access databases for organizing information. The newer and most advanced approach in the industry is a customized software document manager – often referred to as electronic barrier management programs. There are advantages and disadvantages to each of these approaches.

Taking a traditional paper and pen approach may work for a very small facility whose passive fire protection maintenance is minimal. However, in the current climate of advanced technology, taking this approach likely has disadvantages that far outweigh the biggest, “we’ve always done it this way,” advantage. Paper systems advantages include easy access to data, a permanent format for the information, and easy visual viewing. Disadvantages include static completed documentation, meaning managing living data is difficult. Plus, transferring the data and storage can be cumbersome, and not timely.

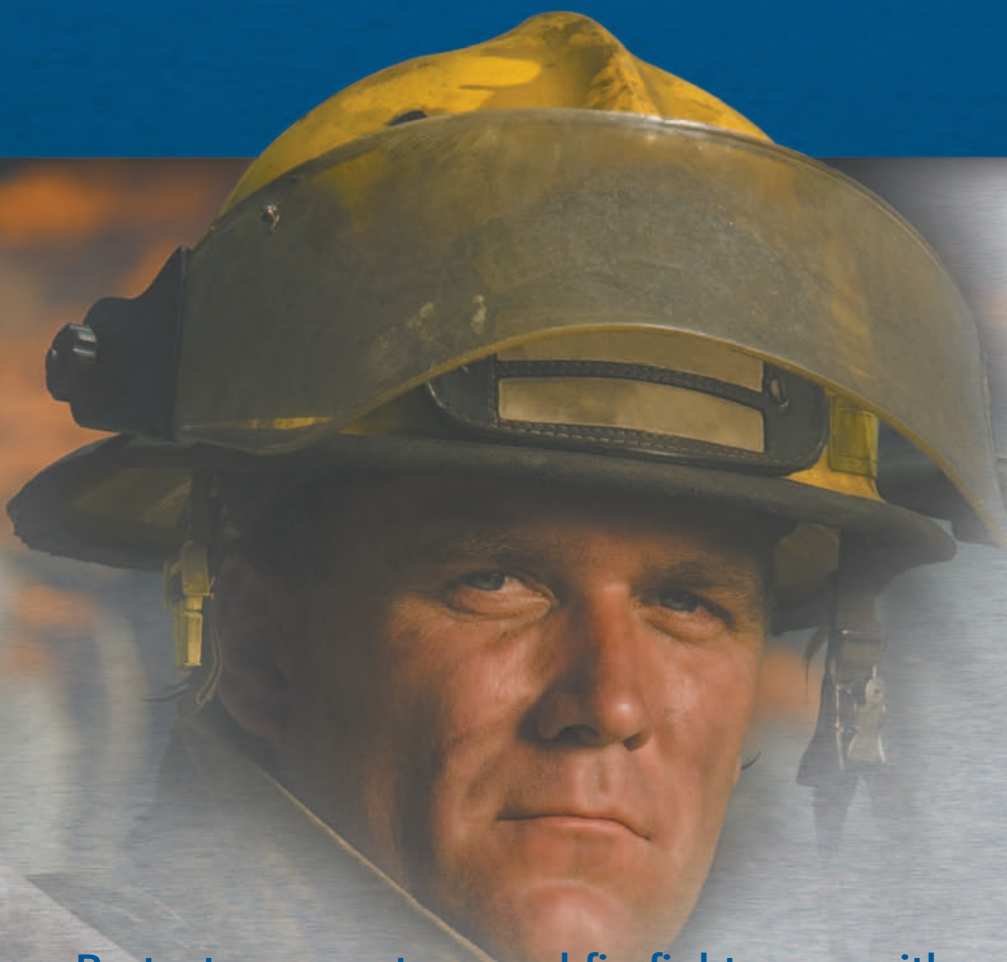
A paper and pen system is inefficient when there are simple programs such as Word and Excel, and even Access, that can provide more detailed and easily maintained record keeping for procedures, inspection results, educational documents and remediation efforts. Using basic computer applications such as Word, Excel



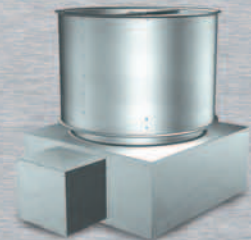
Firestop sealants are tooled. Gleeson Powers Photo



Keep [ **air** ] smoke-free for everybody.



Utility Fans



Roof Mounted Exhaust Fans



Propeller Inline Fans



Smoke & Fire Smoke Dampers

## Protect occupants — and firefighters — with Greenheck emergency smoke-control products.

A reliable emergency smoke management system is a life-saving component of any building's design. Clearing and blocking dangerous smoke from rooms, hallways and stairwells helps occupants breathe and see during evacuation procedures — and helps to safeguard emergency crews as they go about their work.

Greenheck offers a full line of smoke-control products licensed by AMCA and listed with UL/cUL, including centrifugal and propeller rooftop upblast fans, inline propeller fans, and a complete line of smoke and fire dampers. These products can be integrated into a dedicated fire/smoke emergency system, or serve double-duty as components of your everyday ventilation system.

As the industry leader, Greenheck is able to meet whatever air movement and control challenges you face, from simple to complex. For full product specifications and more information, visit our Web site or contact your nearby Greenheck rep.



Prepared to Support  
Green Building Efforts



715.359.6171 • [greenheck.com](http://greenheck.com)





Teamwork means productivity for barrier documentation.  
Gleeson Powers Photo.

and Access allows building owners and contractors to more readily document maintenance and management efforts.

There are many advantages to using an Excel or Word program for maintenance. It allows for more detailed information to be stored in a much more efficient manner than paper and pen. Before and after pictures can be married with Excel records, and these records can easily be sorted. These programs are also very inexpensive and easy to use – most people are using these applications in either their work setting or personal life. Plus, the data is transferred and stored easily. At a certain point, however, even advanced Excel and Access databases fall short for long-term maintenance.

A living database, or electronic barrier management system, is the most technologically advanced approach to proactive maintenance of fire-resistive systems. These custom software applications can automatically schedule inspections, and store procedural documents

and educational materials. Most importantly, they track all fire-resistive systems, so that there is a history of each element of a system for the lifetime of that system. For example, a record is created and a picture is taken when a penetration is firestopped for the first time. If that penetration is altered six months later, it can be logged as no longer being properly firestopped and a picture can be taken. Remediation crews can fix the altered penetration, take a picture, and record that the penetration is now properly firestopped. This penetration now has a living record, showing its condition over time.

Although there are different approaches to documentation management for the maintenance of fire-resistive systems, some kind of system must be implemented to facilitate long-term maintenance and proper DIIM.

While customized software systems provide a living database, they also come with disadvantages. First and foremost, they are expensive. Any customized software costs more than standard Word and Excel applications. This cost may be absorbed by the contractor or building owner, but no matter who pays for it, it is an added business expense that adds an extra dimension to traditional contracting. Another disadvantage to electronic barrier management is the training involved. Both the contractor and building owner and manager are end users, and both must learn a new application to effectively use the program. These two factors alone are enough to deter many contractors and building owners and managers from using electronic barrier management programs.

Having contractors and building owners and managers take the time at the beginning of a project to define a process that allows them to comply with IFC's 703.1 not only ensures that the building is safe, but it also makes the implementation of the process much easier. The documentation system is the backbone, or what holds the process and all information collected together over time. It is important that any facility's fire-resistance rated and smoke-resistant barrier documentation system adequately serve the needs of all involved in the maintenance program.

Depending on facility size, mindset, cost and other factors, this may mean an electronic barrier management system, an Excel or Access database, or a simple pen and paper system. One thing is certain no matter what documentation system is chosen: having a maintenance process in place – putting the "M" in DIIM – is an integral part of ensuring the fire safety of a building.

*Aideen Gleeson is the Director of Business Operations at Gleeson Powers, Inc., a specialty firestop contractor firm. She works closely with GPI Staff on the Life Safety Tracker Barrier Management Software Program. She can be reached at Aideen@gpi-firestop.com. Visit <http://www.gleesonpowers.com> for further info. 🔥*

# Industry News

## Life Safety Digest Remembers FCIA Past President & Life Safety Organization Chair Bob LeClair

FCIA was saddened to hear that Bob LeClair died on May 4. We had just seen him in New Orleans the week before.

Bob was a very active FCIA and Life Safety Organization member and was well known for his passion for the firestop industry. He was FCIA President in 2005, active Co-chair of the Code Committee, past Chair of the Program Committee, member of the Life Safety Digest Committee, and Chair of the Life Safety Organization. During Bob's tenure as FCIA President, Life Safety Digest was launched.

For those who knew him well, they will never forget his unselfishness, volunteering spirit and dedication to family and friends. He will be missed by all. Bob leaves behind his wife Beth, and his young sons David, Robert and Joshua. A "Family Fund" has been established for his loved ones. Contact [linda@fcia.org](mailto:linda@fcia.org) for more info.



Bob LeClair - Staff Photo

## FCIA Firestop Industry Conference & Trade Show

It's never too soon to mark a calendar for great education, forming relationships, and some fun in Southern California in November. FCIA returns to Paradise Point Resort Nov. 8-11.



Paradise Point, San Diego, CA

## FCIA & New ASTM Program

FCIA's Standards Committee travelled to Anaheim, CA, to meet with the ASTM E06 Committees on several issues. The ASTM E 2174 and ASTM E 2393 Standards were discussed, with ballot items forthcoming to improve the standards. The Inspector Qualifications were also discussed. Guide to the Design and Installation of Firestopping was discussed as well. Most importantly, FCIA announced a new initiative at ASTM to create a Standard for the Qualification of Installers and Inspectors of Firestop Systems, using the new personnel certification department created at ASTM just last fall.

## FCIA at IAS

FCIA presented adjustments to the International Accreditation Services Accreditation Criteria AC 291. We were successful in adjusting the name of the UL and FM Firestop Exams by removing the "DRI" in the name from AC 291. The term Designated Responsible Individual (DRI) refers to people who are employed by a company that is a UL Qualified or FM 4991 Approved Contractor. The "DRI" status cannot be used unless the person works for that contractor company that has completed the UL or FM Audit and declared, "Qualified or Approved." Special inspection agency personnel can take the FM or UL Firestop Exam as proof of knowledge, meeting the requirements for individuals that work for AC 291 Accredited Special Inspection Agencies. FCIA was successful getting ASTM E 2174 and ASTM E 2393, Standard for the Inspection of Penetration and Joint Firestop Systems respectively, added to the 2012 International Building Code, Chapter 17. IAS AC 291 Accreditation means the Special Inspection agency has a management system, and firestop inspectors who have passed the FM or UL Firestop Exam. For info, visit <http://www.fcia.org>, Inspector Accreditation.



## Koffel Appointed to ICC CTC

FCIA Code Consultant, Bill Koffel has been appointed to the Code Technology Committee (CTC) by the International Code Council (ICC). His knowledge of fire resistance, fire protection and the codes and standards make him a great choice for this group.

## FCIA Requests Info on Product Data Sheets

Specialty firestop contractors who inspect their own installed firestop systems have noticed that some firestop sealants/caulks shrink after application. FCIA's Standards Committee has requested to the International Firestop Council (IFC) that manufacturers of products used in firestop systems list on the product data sheets how much their products shrink during and after curing and to list the percent solid content as well. We thank Jim Stahl, Jr., the IFC Chair, for taking on this project head on. The first request was in August 2008. FCIA recommends specifiers insist on this data in specifications and contractors for projects.

## DHI Fire Door Assembly Inspectors

NFPA 80 specifies that inspections of fire door take place in buildings. Inspections must be performed by individuals knowledgeable about the operating components of doors subject to testing. The Door and Hardware Institute's Door Security and Safety Foundation lists certified professionals from the Fire Door Assembly Inspector (FDAI) program. This program provides an excellent knowledge base for fire door inspectors. Locate a FDAI professional who is certified to perform these inspections at [DoorSecuritySafety.org](http://DoorSecuritySafety.org).





## ICC Re-engineers its Code Councils

International Code Council Members along with non-member stakeholders volunteer to apply their technical expertise to further the association's public safety mission working through more than 100 technical committees or councils. To continue to broaden participation, the ICC Board has revised [Council Policy #09](#) to re-engineer its councils to establish new "chartered" Membership Councils along with a multi-disciplinary Codes and Standards Council. The first councils are Building Officials, Fire Service, Plumbing, Mechanical and Fuel Gas, Sustainability (includes Energy Conservation) and ICC Global.

## NCMA Promotes Thompson

The NCMA board of directors approved Jason J. Thompson as its new vice president of engineering. Thompson, a structural engineer that has been with NCMA for 14 years, received the appointment during NCMA's annual convention in Las Vegas. He has served in many leadership capacities on behalf of the association and the masonry industry including the chairman of the Masonry Alliance for Codes and Standards and secretary of the Masonry Standards Joint Committee.

## Portland Cement Association Promotes "Functional Resistance"

Check out PCA's position on "Functional Resistance" recommended for buildings. PCA has some good points, several of which will be part of the International Green Construction Code debates throughout 2011. Everything from Fire Resistance to Sustainability and more is in this document. [http://www.cement.org/codes/pdf/HPBRS\\_prerequisites.pdf](http://www.cement.org/codes/pdf/HPBRS_prerequisites.pdf)

## Gypsum Association Fire Resistance Courses

The Gypsum Association has recently updated its three online education courses: *Understanding the GA-600 Fire Resistance Design Manual* (FRDM06); *Understanding the Finishing of Gypsum Panel Products Using GA-216 and GA-214, Recommended Levels of Gypsum Board Finish* (LFGP07), and *Application of Gypsum Panel Products* (GA216E). Courses have been approved by the American Institute of Architects (AIA) for AIA CEU credits upon completion with a score of 80 percent or better.

Visit <http://www.gypsum.org/OnlineCourse/index.cfm> to learn more.

## BALCO Announces Preferred Installer Program

Balco, Inc. has a long standing reputation for commitment to life safety standards used in commercial construction and renovation. According to BALCO, there are widespread hospital renovation opportunities due to changes in the Joint Commission inspection procedures uncovering non-conforming life safety construction defects outlined in the 2011 Comprehensive Accreditation Manual. BALCO's mission is to help bring over 18,000 health care facilities up to current building and life safety standards by supplying approved and listed products manufactured by BALCO through a Preferred Contractor Network nationwide.

Balco is seeking FCIA Member Contractors nationwide to become a Preferred Installer for their products. Contact Balco for further information at <http://balcousa.com>.

# Code Corner

## ICC Code Development

The International Code Council has an "off year," for the ICC Family of Codes including the International Building Code, International Fire, Existing Buildings, Residential, Plumbing, Energy and other codes this year. While those code development cycles are resting, the International green Construction Code (IgCC) is being debated.

## IgCC Code Development Process

The International green Construction Code (IgCC) is in its final development process in 2011. With hearings in Dallas May 16-21, committees heard almost 1,900 pages of code proposals to alter the IgCC Draft 2.0. Results of hearings will be published June 27, and public comments to the results are due to ICC Aug. 12. A Final Action Hearing is scheduled for Nov. 2-6 in Phoenix, with publication of the final code due out March 12, 2012.

## ASTM's Response

At ASTM E06 Meetings in Anaheim, CA, a special meeting was held regarding "Green Standards." ICC Staff

and ASTM Committee E-60 on Sustainability leaders Dru Meadows and Christopher Mathis, spoke about the lack of standards in the "Green" environment. It seemed the consensus of the room was that the standards developers involved in the ASTM process are looking to the code to understand what standards to develop. Since the IgCC is not yet finalized, they do have a point. However, Warwick, RI, Richland, WA, and the State of Maryland have all adopted DRAFT 1 or DRAFT 2 of the IgCC. We look forward to seeing standards developed to meet the demands this new code will bring.

## NFPA Code Development

The 2012 NFPA Code Development Process is coming to a close. Final Notice of Intent to Make a Motion (NITMAM) will be presented at NFPA's Technical Meeting June 14 & 15 in Boston. Several NFPA documents have NITMAM's to be heard. Visit [NFPA.org](http://NFPA.org), NFPA Conference & Expo for info.

# Life Safety Digest 2011 Industry Calendar

---

## June 12 to 15

NFPA Conference & Expo Boston

## June 12 to 15

ASTM E05 Fire Standards Meetings  
Anaheim, CA

## June 21 to 23

Building Hardware Manufacturers Association Meeting  
Providence, RI

## June 26 to 29

BOMA – The Every Building Show  
Washington DC

## July 18 to 19

American Society of Healthcare Engineers  
Seattle

## Sept. 13 to 16

CONSTRUCT2011, CSI Annual Convention  
Chicago

## Oct. 16 to 19

FCIA Middle Eastern Conferences  
(Watch FCIA.org for details)

## Oct. 26 & 27

Door & Hardware Institute 36th Annual Conference & Exposition  
New York

## Oct. 30 to Nov. 2

ASTM E06 Performance of Buildings Meetings  
Tampa

## Oct. 30 to Nov. 3

ICC Annual Conference  
Phoenix

## Oct. 23 to 28

Society of Fire Protection Engineers Annual Meeting, Professional Development Conference  
Portland, OR

## Nov. 8 to 11

FCIA Firestop Industry Conference & Trade Show  
San Diego

## Dec. 4 to 7

ASTM E05 Fire Standards Meetings  
Tampa

## Professional Training Yields Expert Fireproofers



Fire Rated Walls



A Great Finished Deck



Applying the Proper Thickness

**Call us for information about today's  
fireproofing and plastering systems and  
the best people to apply them.**



Chicago Plastering Institute  
5611 W. 120th Street  
Alsip, IL 60803  
(708) 371-3100



# Expect More

More cost savings, more billable square footage



More building space,  
more design flexibility



More time savings, lower installation costs



More solutions for code  
compliant protection of  
both air and grease ducts



**FyreWrap® Duct Insulation delivers more to every member of your project team.**

FyreWrap® Elite™ 1.5 Duct Insulation is ideal for the insulation of duct systems in hotels, schools, restaurants, high rise condos, medical facilities, research labs, and sports arenas and stadiums. This flexible, light-

FYREWAP FOR AIR DISTRIBUTION SYSTEMS



weight duct wrap provides a single fire protection solution for both

air distribution and grease duct systems. FyreWrap Elite 1.5 Duct Insulation offers:

- Space-saving shaft alternative for air distribution and grease duct systems.
- 2 hour fire-rated duct protection; zero clearance to combustibles.
- Solutions for building design and complex job configurations.
- Thin, lightweight flexible blanket for faster, easier installation.
- Offers both fire and insulation performance.

- Complies with NFPA 96, ICC and IAPMO Codes.
- Made in USA.

A FyreWrap product specification in several formats is available at [www.arcacat.com](http://www.arcacat.com); search using keywords Unifrax, FyreWrap or [www.unifrax.com](http://www.unifrax.com). For more information on FyreWrap Elite 1.5 or other products, certifications, code compliance, installation instructions or drawings, contact Unifrax Corporate headquarters USA at 716-278-3800.



[www.unifrax.com](http://www.unifrax.com)



# FIRESTOPPING, IT'S ALL WE DO

...and we do it better!

For 20 years STI has invested heavily in R&D, testing and the firestop industry. As the fully focused manufacturer with the broadest range of products and UL<sup>®</sup> systems, professional contractors rely on STI for innovation, quality and expertise.

Specified Technologies Inc. • Somerville, NJ 08876 USA • T: 800.992.1180 • F: 908.526.9623 • [www.stifirestop.com](http://www.stifirestop.com)

