

Volume 7, No. 3

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The Magazine of Effective Compartmentation



# Life Safety DIGEST

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**Firestopping Installation & Inspection 2011**  
**Designing Healthcare Facilities for Fire Safety**  
**Testing Mechanisms for Smoke and Fire Smoke Dampers**  
**Easy Access for Safe Fire Rated Grease Ducts**

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#### On the Cover:

Fire-rated glass can meet a range of glazing needs in healthcare occupancies. Photo courtesy of Technical Glass Products

# Life Safety DIGEST

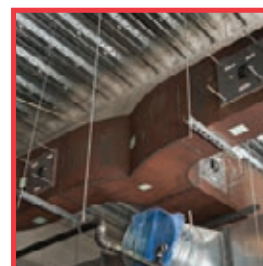
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# Editor's Message

While attending the American Society of Healthcare Engineers shows in 2011, FCIA heard that Healthcare Occupancies are one of the most building and fire code regulated building types in our construction industry.

Building and fire code regulations have built a very impressive safety record in these healthcare structures. With fire and smoke barriers, sprinklers, alarms, and a trained staff who rehearses and follows the many emergency procedures, a safe building has been the result.

At Life Safety Digest, our hats are off to those who participate in Healthcare Construction and ongoing building operation and maintenance and ASHE Member Building Engineers during National Health Care Facilities and Engineering Week, Oct. 23-29.

Fire and life safety starts before the building is built too. FCIA and Life Safety Digest look forward to meeting the specifiers who work on these structures before they are built, during the CONSTRUCT2011, in Chicago.



Enjoy this collection of articles on fire dampers, fire resistance rated grease ducts for kitchens, fire rated glazing...and industry news on new lightweight fire resistant gypsum and concrete block, and more. Plus, don't miss the discussion of the new International Green Construction Code.

The fire and life safety statistics that have made safe healthcare buildings works because people respect the construction and emergency procedures developed to keep them safe. To that end, we all play a part in safe structure statistics, and being safe for life.



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# Firestopping Installation & Inspection 2011

By Bob Hasting & Bill McHugh

FCIA has been pursuing the proper Design, Installation, Inspection and Maintenance (DIIM) of the firestopping trade through building independent “standards.”

Here’s how the DIIM works with standards for firestopping:

- **Design** – Specifications by design professionals with systems tested and listed at approved agencies, (UL, Intertek, etc.), to ASTM E 814 & UL 1479 for Penetrations, UL 2079 & ASTM E 1966 for Joints, ASTM E 2307 for Perimeter Firestopping.
- **Installation** by FCIA member, FM 4991 Standard for the Approval of Firestop Contractors, UL & ULC Qualified Contractor Programs.
- **Inspection** to ASTM E 2174 and ASTM E 2393 Inspection Standards
- **Maintenance** – “Annual Visual Inspection” to FCIA Firestopping Manual of Practice resources, and also the FCIA RPP-Recommended Practice for Survey of Existing Buildings.

These four programs are designed to improve firestopping construction quality. This article focuses on Installation & Inspection portions of the DIIM.

## Installation

Many industries approve, accredit or certify contractors as qualified to install products. Some industries provide manufacturer approved contractor programs. The advantage is the manufacturer programs are product-specific, and very focused.

Some manufacturers have great programs, with great criteria to become part of the program. However, the disadvantage is that manufacturers that have an economic incentive to approve all contractors who buy their products can overshadow good intent. Some will help contractors pass exams so they can buy their products, especially when they are low bid.

The other type of contractor accreditation program is the “certified contractor by an approved agency” concept. This is a program independent of the contractor, manufacturer distributor or manufacturer’s reps and consultants. Both FM Approvals and Underwriters Laboratories offer programs, called FM 4991, Standard for the Approval of Firestop Contractors and the UL Qualified Firestop Contractor Program.

The process to become FM 4991 Approved or UL Qualified is rigorous:

- Visit FCIA.org FM 4991 Approval & UL Qualification pages, learn requirements.
- Get the FCIA Firestopping Manual of Practice and study it.
- Take the FM and/or UL Firestop Exam, and receive a score of at least 80%.
- Review or write the firm’s Management System or “quality” Manual. A sample is available to FCIA members.
- Submit the management system for review by FM or UL.
- Apply for an audit of your firm’s management system by FM and or UL.
- FM and/or UL audits company project files and a jobsite, to verify that the firestop contractor firm has procedures in place to get firestopping done right.
- Pass or Fail, it’s good for the firestop contracting company to develop the best, fastest, and most competitive systems, while making fire and life safety the top priority.



The programs are well respected by specifiers and architects through acceptance in master specification agencies such as MasterSpec and SpecLink. These 07-84-00 specs mean FM & UL contractors are asked to bid on this work, as a single trade.

There are FM or UL contractors available in the United States, Canada and the Middle East found at <http://www.FCIA.org>.

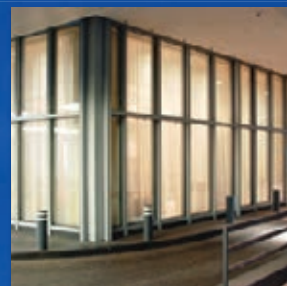
Additionally, FCIA is building a four-year Firestop / Containment Worker Apprenticeship Education Program for the workforce. (See Sidebar)

## Inspection

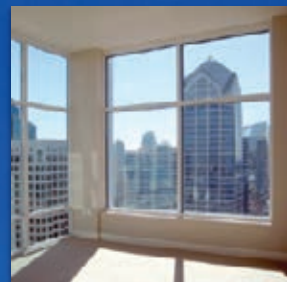
Firestopping Inspection is growing, as part of the building commissioning process. Independent special inspection agency firestop inspection firms have been

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reviewing installations, and finding that specialty firestop contractors get it right more often than non specialist firestop contractor firms, by huge factors.

FCIA developed with ASTM two standards for inspection, ASTM E 2174 & ASTM E 2393, Standards for On-Site Inspection of Penetrations and Joints, starting in 2004. FCIA submitted code proposals over three code development cycles to add both FM 4991 Approved or UL Qualified Contractors, and Independent Inspection. As a result, the International Code Council (ICC) 2012 International Building Code now has a requirement for special inspections.



In Chapter 17, 1705.16, in high-rise buildings or in buildings assigned to *Risk Category* III or IV, in accordance with Section 1604.5, Special Inspections for through-penetrations, membrane penetration firestops, fire-resistant joint systems, and perimeter fire barrier systems take place.

During the debate, a great point was made by building officials and fire marshals. "While we support inspection, we believe investing in an FM 4991 or UL Qualified Contractor is better," was the comment at ICC's Committee Hearings in Baltimore.

Good point. If a FM 4991 Approved or UL Qualified Firestop Contractor is used, is Independent Inspection needed? Without an approved/qualified contractor, how much more does it cost to inspect firestopping? Are both FM 4991 Approved or UL Qualified Contractors and ASTM E 2174 & ASTM E 2393 Inspection needed? Is only Inspection needed? Another question about inspection has been, "Who's qualified to inspect firestopping?"

In 1704.2.1, the "Special Inspector" shall provide written documentation to the building official demonstrating competence. FCIA worked with International Accreditation Services to add that the inspector pass the FM or UL Firestop Exam, in addition to the other criteria in IAS Accreditation Criteria (AC), IAS AC 291.

FCIA has worked with architects, specifiers, building officials, fire marshals, building owners and others to build programs that bring integrity and quality through installation and inspection standards. Join FCIA and get FM 4991 Approved, UL Qualified, IAS AC 291 Accredited, FCIA Apprenticeship Education and Manufacturer trained to build firestopping and effective compartmentation that protects people, buildings, and our families.

*Bill McHugh is Executive Director of the Firestop Contractors International Association and can be reached at [bill@fcia.org](mailto:bill@fcia.org). Bob Hasting, DRI, is Chief Technical Officer for Specialty Firestop Systems, Vancouver, WA, a UL Qualified Firestop Contractor and 2011 FCIA President. Bob can be reached at [Rhasting@specialtyfirestop.com](mailto:Rhasting@specialtyfirestop.com) 🔥*

## Trained Firestop/ Containment Workforce— Key to Success

Discussions have occurred over a number of years that an apprenticeship program for the Firestop/Containment Worker is sorely needed. To address this, FCIA is building a four-year Firestop / Containment Worker Apprenticeship Education Program. FCIA's goal is to create a "trade" recognition for the specialty firestop contractor who employs a trained workforce.

Apprenticeships were well known in ancient civilizations such as Egypt, Greece, Rome and Asia. Apprenticeship is a system or mentoring process for training a new generation of skilled crafts persons.

A majority of the training is done on the job while working for an experienced craftsman who assists the apprentice in learning their trade. The value of on the job training and practical education has become more recognized with numerous emerging apprenticeable occupations over the past few years.

In October of 2006, Washington State approved an apprenticeship standard for the Firestop/Containment Worker. This standard was developed in accordance with state and federal regulations. A time based program establishing an apprenticeship of four years to achieve journey level status, the program requires 8000 hours of on-the-job-learning and 576 hours of related supplemental classroom instruction. Since its inception the program has been successfully audited each year and has been embraced by the employers who hire from the labor pool.

In 2010 the state of Oregon accepted submittal of the Firestop/Containment Worker apprenticeship standard application based on similar requirements to the Washington program and approved the standard in March of 2011. Also in 2010, the US Department of Labor requested assistance in developing a standard in the state of Virginia. It is still pending.

Firestopping is a recognized apprenticeable occupation and contractors and workers can look forward to acceptance of the trade over the next several years in multiple states throughout the US.



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# Designing Healthcare Facilities for Fire Safety

By Jeff Razwick

The National Fire Protection Association (NFPA) Fire Protection Handbook states: “The first principle of designing a fire safe healthcare facility must be that safety must not depend wholly upon any single safeguard.” This is true for numerous building types, especially healthcare facilities because many occupants are incapable of self evacuation, or if they are ambulatory, may not be able to recognize the danger and respond appropriately in a fire.

Also, since many patients rely on life support devices, evacuation is often considered more dangerous than keeping them in place. Consequently, many hospitals train staff to remain with their patients until a fire is extinguished.

In light of these issues, the handbook notes: “Total building fire protection for life safety is more necessary in healthcare facilities than in other occupancies...”

## Total Building Protection

Generally, a multi-pronged approach to fire protection includes detection, suppression and building compartmentation. Incorporating all three systems helps ensure a well-rounded fire safety plan, where each component works in conjunction with and supplements the others. However, in recent years there has been a trend in building design and construction to rely more heavily on detection and suppression systems—sometimes in exchange for reduced compartmentation.

The problem is that alarms and sprinklers require activation. When properly designed, installed, inspected and maintained, such systems perform well. But they are still subject to human and mechanical error. Power outages, interrupted water supply, melting pipes, paint and even curtains have interfered with sprinkler performance. NFPA data show that sprinklers fail to operate effectively in about 10 percent of fires.

In addition to sprinkler failure risks, many of today’s healthcare facilities are being built with lighter weight materials. As designs have progressed, walls, floors and ceilings have become thinner, with the potential to burn quicker than the relatively heavy materials used in the past.

Given the fallibility of active fire safety systems and the shift towards more lightweight materials, failing to provide supplemental protection could shortchange life safety.

Incorporating properly designed, installed, inspected and maintained building compartmentation can help resolve this dilemma. Compartmentation generally does not require activation, providing a ready backup when sprinkler and alarm systems do not perform or reach the area of fire. These fire- and smoke-resistant characteristics are also well suited to the specific needs found in healthcare environments. Although compartmentation is not a single solution to fire protection, taken together, the multi-pronged approach adds a margin of safety to help protect lives and property in buildings.



Clear and wireless fire-rated glass ceramic offers the aesthetics of traditional glass. Photo courtesy of Technical Glass Products



Available with impact safety ratings, fire-rated glass provides visibility in busy corridors. Photo courtesy of Technical Glass Products



By dividing buildings into segments, fire-resistance-rated wall and floor systems can help contain fire and smoke for extended time spans. This increases the safe period for patients who must remain inside the facility and allows more time for firefighters to arrive and extinguish the fire.

## Fire-rated Glass and Frames in Healthcare Facilities

Although numerous materials and assemblies can help support effective building compartmentation—from masonry to gypsum to fire dampers and firestop systems—fire-rated glass is unique for those fire safety applications that also require light transfer and visibility. Many healthcare facilities rely on extensive glazed areas to bring in natural light for patient and worker well-being, reduce lighting costs, improve views to exterior landscape and surroundings, and enhance safety and security.

Due to advances in manufacturing, fire-rated glazing is now available to meet a range of design and performance needs. Among the many options, transparent ceramic glass provides the look of ordinary window glass and is available in a range of make-ups, including with fire ratings up to three hours. Ceramic glass can also be laminated or filmed to meet impact safety requirements.

Glass fire barriers are also available for areas with heat sensitive medical equipment, critical care units, exit corridors and stairwells. Tested to ASTM E119 standards, these glass and frame assemblies block the transfer of radiant and conductive heat - as well as flames and smoke—providing a transparent glass solution where formerly only solid masonry or sheetrock may have been considered.

## Specifying Fire-rated Glazing

When specifying fire-rated glazing, whether for healthcare facilities or other occupancies, three key factors must be addressed in construction documents. This discussion is meant to be a starting point. For full specification details, consult local building code requirements for the given application. Also, when researching options, helpful MasterFormat numbers to reference are “08 81 00–Glass Glazing” and “08 88 13–Fire-resistant Glazing.”

**1. Fire rating:** Fire-rated glass is rated from 20 to 180 minutes, corresponding to the length of time the material has been tested to provide protection against the spread of flames and smoke (see “Testing and Labeling Requirements for Fire-Rated Glazing”). The required rating depends on the specific application



Fire-rated glass can meet a range of glazing needs in healthcare occupancies. Photo courtesy of Technical Glass Products



Tested to ASTM E119 standards, fire-rated transparent wall panels can be used for glass walls and partitions. Photo courtesy of Technical Glass Products

and is generally dictated by the applicable code. The framing must also carry a fire rating consistent with the glazing. The glass, frames and seals all work together to defend against fire.

**2. Fire-protective vs. fire-resistive:** Fire-rated glazing falls into two general categories. Those materials designated “fire-protective” block the spread of flames and smoke for a given fire rating (in minutes). “Fire-resistive” glazing also blocks flames and smoke, and goes a step further by providing a barrier to radiant and conductive heat transfer.

Fire-protective glazing is sufficient in many healthcare settings, potentially including transoms, borrowed lites and doors. However, areas where individuals may be present during a fire for prolonged periods, including stairwells and exit corridors, often require fire-resistive glazing.



3. *Impact safety rating:* In addition to carrying a fire rating, glazing in many healthcare settings also must be impact resistant. Fire-rated glazing options are available that meet Category II of the Consumer Product Safety Commission (CPSC) Safety Standard for Architectural Glazing Materials—the highest standard of impact safety for glass. Such glazing may be suitable for doors, sidelites and transoms in emergency rooms, busy corridors and lobbies where it could be impacted by fast moving people, gurneys or supply carts.

## Conclusion

Healthcare facilities provide crucial medical services for thousands of patients across the country each day. To ensure that these facilities continue satisfying the needs of community members now and for decades to come, it is critical to construct buildings that offer thorough fire protection. This includes the incorporation of alarms and sprinklers, as well as effective building compartmentation.

*Jeff Razwick is vice president for Technical Glass Products (TGP), a supplier of specialty architectural glazing products and fire-rated glass and framing systems. He chairs the Glass Association of North America (GANA) Fire-rated Glazing Council (FRGC) and works closely with code officials, manufacturers, and other industry professionals on fire-rated glazing applications. [www.fireglass.com](http://www.fireglass.com), (800) 426-0279. 🔥*

## Testing and Labeling Requirements for Fire-Rated Glazing

To receive a fire rating, glass must pass both a fire test and a hose stream test. In the fire test, a large furnace heats window frames or doors holding glass following a standard time-temperature curve per NFPA standards. To receive a particular rating, the window or door assembly must remain in the wall for a specified length of time, and meet criteria such as no flaming on the unexposed surface of the assembly or openings. The 2012 International Building Code (IBC) clarifies that all fire-resistance ratings must be obtained independent of supporting active systems, such as deluge sprinklers.

Immediately after the fire test, the hot glass and framing are subjected to the hose stream test, in which testing labs spray the assembly with water from a fire hose. During this process, the glass and frames must withstand the impact, erosion, and cooling from the water.

Among the testing standards for fire-rated glazing are:

- NFPA 251, Standard Methods of Tests of Fire Resistance of Building Construction Materials

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## Testing and Labeling Requirements for Fire-Rated Glazing, Continued

- NFPA 252, Standard Methods of Fire Tests of Door Assemblies
- NFPA 257, Standard on Fire Test for Window and Glass Block Assemblies
- UL 10B, Fire Tests of Door Assemblies
- UL 10C, Positive Pressure Tests of Door Assemblies
- UL 263, Fire Tests of Building Construction and Materials.

In addition, some fire-rated glazing—notably transparent wall panels—is tested as a wall assembly in accordance with ASTM E119, Standard Methods for Fire Tests of Building Construction and Materials. Such glazing can be used in floor-to-ceiling applications in extended wall areas.

Labels permanently affixed to fire-rated glass indicate which tests it has passed, and which applications it is suited for. The 2012 IBC incorporates amendments to the fire-rated glass marking system to further simplify the number of marks from the previous system, and now includes:

- “**W**” for Walls: indicates fire-resistance-rated glazing meets Wall assembly criteria (ASTM E119 or UL 263)
- “**OH**” for Openings: indicates fire-rated glass meets fire window assembly criteria, including the Hose stream test (NFPA 257 or UL9)
- “**D**” for Doors: indicates fire-rated glass meets fire Door assembly criteria (NFPA 252, UL 10B or UL 10C)
- “**H**” indicates glazing meets the fire door assembly Hose Stream test
- “**T**” indicates glazing meets 450 degree Fahrenheit Temperature rise criteria for 30 minutes

The last component of the marking code is a two- or three-digit number showing the fire rating (in minutes).

As an example, a fire-rated glass label with the code “D-H-45” indicates the product is suitable for use within door assemblies, has passed the required hose stream test, does not meet temperature rise door criteria, and is fire-rated for 45 minutes.

**THE ADVENTURES OF APEX THE FIRESTOPPER**

IN THIS ISSUE, APEX IS PERFORMING A ROUTINE FIRE-BARRIER SURVEY WHEN...

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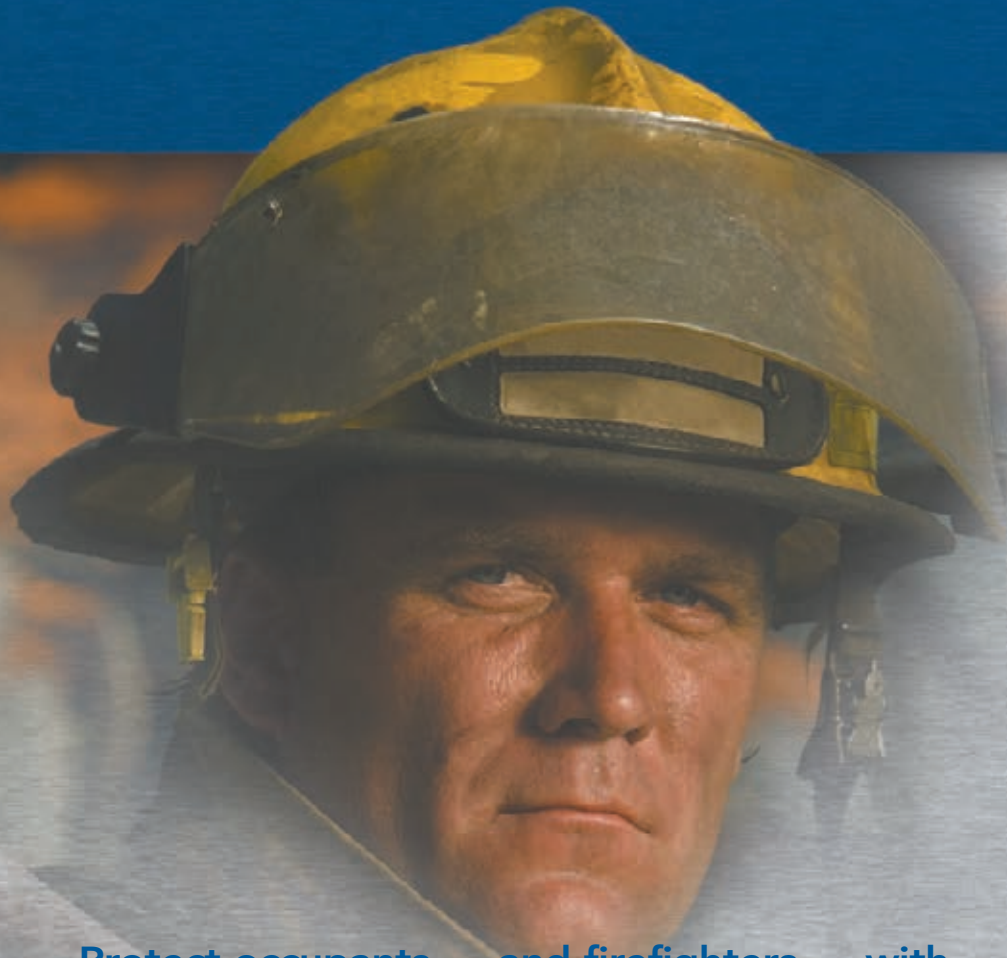
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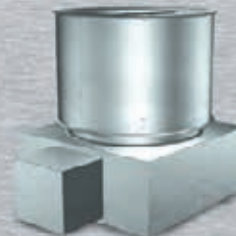
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# Testing Mechanisms for Smoke and Fire Smoke Dampers

By Michael Kluck

Smoke dampers and combination fire smoke dampers are proven and effective products for limiting the migration of fire and smoke through ducts and air transfer openings. And, because of the need to protect building occupants in healthcare occupancies, there are many fire and smoke dampers in these buildings.

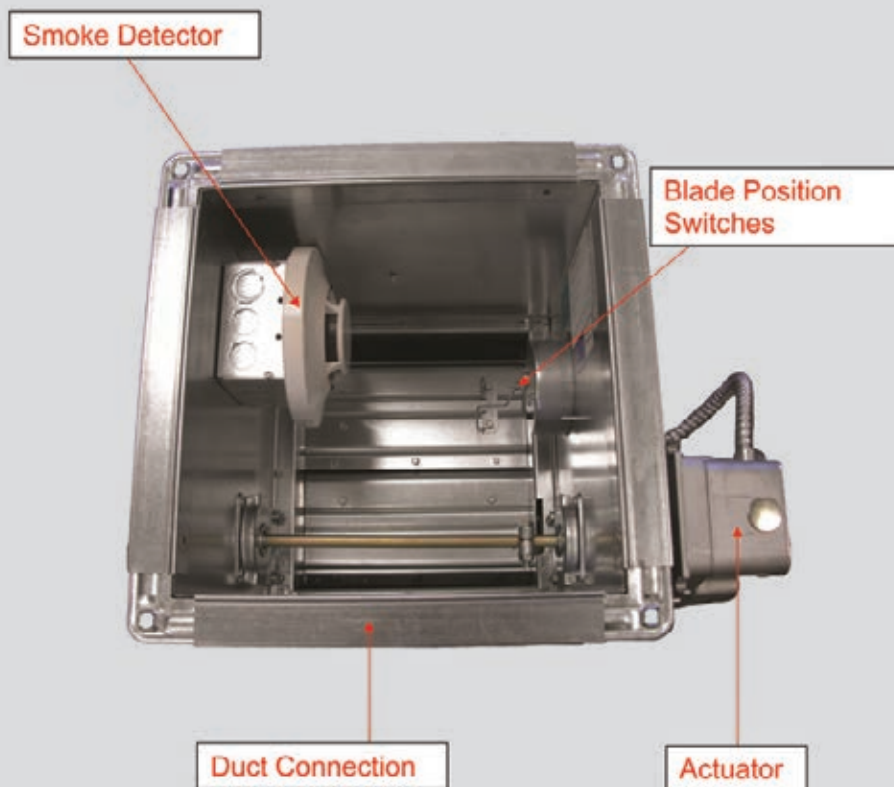
However, like all mechanical devices that are hidden above ceilings and in other difficult-to-access locations, the testing and maintenance of these dampers can be time consuming. Many building owners and maintenance personnel believe that the testing of smoke and fire smoke dampers requires visual inspection of the dampers. Depending upon how the code or standard being referenced is interpreted, this is not necessarily true. The purpose of this article is to discuss the options for making the inspection and maintenance of smoke and fire smoke dampers quicker, easier, and cheaper.

Before discussing how to conduct the inspection and maintenance of these dampers, let's review the requirements for inspection and maintenance that are found in commonly referenced codes and standards and in damper manufacturers' installation instructions.

The two primary codes referenced for determining damper testing and maintenance requirements are the International Fire Code (IFC) and the National Fire Protection Association (NFPA) Life Safety Code® NFPA 101. These codes reference other NFPA standards that define damper testing and maintenance requirements. Section 703.1.2 of the 2009 IFC states, "Smoke dampers shall be maintained in accordance with NFPA 105." For fire dampers, section 703.1.3 of the IFC states, "Fire damper shall be maintained in accordance with NFPA 80." Likewise, section 8.5.5.4.2 of NFPA 101 states, "Smoke dampers and combination fire smoke dampers shall be inspected, tested and maintained per NFPA 105."

Both NFPA 80 and 105 list the same requirements for maintaining dampers—"Each damper shall be tested and inspected one year after installation. The testing and inspection frequency shall then be every four years, except in hospitals, where the frequency shall be every six years."

The key word in the NFPA 80 and 105 requirements is "inspection." The purpose of these inspections is to confirm that the dampers are operating properly. Since smoke and fire smoke dampers are required to have electric or pneumatic actuators, these dampers can be operated remotely. Because of this, the position, and thus the operability, of smoke and combination fire smoke dampers can be remotely monitored. This is accomplished with the use of a switch that makes when the damper is fully open and a second switch that makes



Fire/Smoke dampers combine several technologies for fire and smoke resistance in and around ductwork. Greenheck Photo



Remote controls electronically operate dampers. Greenheck Photo

when the damper is fully closed. (Note: 'makes' is the electrical term describing when a switch closes to allow the flow of electricity.)

There are two common methods for implementing position indication on smoke and combination fire smoke dampers. The first is with a "switch package" installed by the damper manufacturer that ties two normally open SPST (Single Pole Single Throw) switches directly back to one of the damper's blades. One SPST makes when the damper is nearly fully open and the other when the damper is nearly fully closed. If the damper is in an intermediate blade position, neither switch will connect (See figure 1, OCI [Open/Closed Indicator] blade indication switches).

The second method used to monitor damper position is by way of actuators with built-in auxiliary



Fire Damper Angles protect the annular space around the damper, allowing movement. Greenheck Photo

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Fire Dampers are serviced by professionals who understand the dampers.  
Greenheck Photo

switches (also called end switches). As with the stand-alone switch package, one switch connects when the damper is nearly fully open and the other when the damper is nearly full closed.

In buildings with smoke management systems, these switches are commonly wired to a master control panel located within a control room or area that would be accessed by firefighters in a fire emergency. The master control panel has a series of switches and indicator lights that are wired individually, or in groups, to the dampers for fire and smoke control. From this location, the firefighters can determine the location of the fire and open or close the smoke and fire smoke dampers from the master control as necessary to create positive and negative pressures within the building to stop or control the spread of smoke. In turn, the ability to create positive and negative pressures gives occupants more time to exit the building or remain in place in a smoke-free environment until they can be rescued. The master control panel allows all the dampers to be remotely cycle tested and monitored from a single location.

Another way to remotely cycle test the dampers is to field wire the switch package at the damper to a test station or control panel remotely mounted in an area with easy access. The damper manufacturer can supply the test station with a controlling switch to remove

power from the actuator, as well as red and green indicator lights. The switch package at the damper is field wired through the red and green lights on the test station allowing the user to verify damper position at the test station. In addition to making frequent cycle testing easy, test stations give early detection of a malfunctioning damper because it is easy to see if the damper is open or closed by simply looking at the indication light.

Test stations can be supplied with a variety of control switches ranging from a simple toggle-switch or push-button switch to key switches. Or, they may not have a controlling switch, just red and green indicator lights. These single test stations are smaller and allow for more flexibility of mounting locations. They can also be supplied with multiple control and light packages in one master control station (see figures 2, 3, and 4, Greenheck Test Station (GTS)-1 through GTS-20 test stations).

Whether cycle testing smoke and fire smoke dampers the bare minimum of every six years—as spelled out in NFPA—or cycle testing them every day, taking advantage of the ability to remotely operate and verify the position of smoke and combination fire smoke dampers can save a great deal of time, frustration, and money, enhancing fire and life safety in important healthcare building occupancies.

*Michael Kluck is Channel Manager, Life Safety Dampers at Greenheck Fan Corp., and can be reached at michael.kluck@greenheck.com. 🔥*

### Fire Damper Testing Without Remote Access

Usually two people are required for this method of Fire Damper Testing.

1. One person is located at the fire alarm control panel. The other physically goes to the location of the fire damper. They use radios to communicate and verify positions.
2. The person at the damper locates it and looks through the access door at the damper.
3. The person at the damper communicates with the person at the fire alarm control panel to cycle the damper.
4. The person at the control panel would then power down the damper by turning off a switch controlling the damper. This in turn would cycle the damper blades closed and be witnessed by the person looking through the access door. Personnel at the damper verify the damper fully strokes closed. At that point they communicate with the person at the control panel to restore power to the damper and verify it strokes fully open.
5. Then they move on to the next damper.
6. Using the remote damper program, one person is eliminated in the process.



# Easy Access for Safe Fire Rated Grease Ducts

By Vince Bloom

Kitchen managers and restaurant owners should be aware of their role in fire prevention and ensure hood cleaning is done on a regular basis.

In healthcare facilities, building additions just keep coming. Areas that were once outside walls are becoming part of another building as land is used for patient care and services.

Commercial kitchens, regardless of their location, require a hood and ductwork over the stove station to exhaust fumes, smoke and steam out of the building, and for fire resistance. Kitchens are more isolated, and exhaust travels further than ever before, both horizontally and vertically.

The ventilated gas fumes leave a film on the inside of the ductwork, usually in the form of grease residue. The accumulation of grease becomes a fire hazard, with estimates showing 1 out of 3 restaurant or food service fires are caused by this problem.

An ignition source, such as a stove flare-up, can come in contact with duct filters setting them ablaze. Air drawn by the exhaust fan pulls the fire up the hood through the ductwork, igniting grease deposits throughout. The resulting fire can climb multiple stories as long as there is grease for fuel.

Grease duct cleaning is usually mandated every three months and requires access to the duct interior. However, the number of times is ultimately determined by usage and type of cooking being done.



Bare grease duct prior to fire resistance rated ductwrap application. Note prefabricated doors with extra long threaded rods already welded in place. Ductmate Photo

Experience has shown that a majority of the grease exhaust duct systems in restaurants may not be maintained properly. Reasons include limited budget, ignorance or lack of accessibility to all the surface areas within the grease duct.



Fire resistance rated duct wrap layered prior to door application. Ductmate Photo

The question must be asked: What can be done to improve hood cleaning and limit the possibility of a grease duct fire? Legislation, inspection and enforcement can certainly help, but there is one way to increase the safety record and that is to improve accessibility throughout the entire duct system. Pre-manufactured access doors make it easier and faster for the clean-out crew and are very cost effective.

Access doors are usually installed in the ductwork during construction. Mechanical codes dictate spacing and locations of doors. It is quite common for fire-rated grease duct access doors to be fabricated at the jobsite, usually referred as field-installed.

Since field-installed doors meet code requirements if made correctly, the final assembly may depend on the skill of the fabricator. Besides cutting the opening, there are a number of steps that involve drilling, welding and additional components, all requiring field fabrication time.

One of the most frequent complaints made by hood cleaners is the lack of an adequate number of doors in grease ducting.



Fire resistance rated wrap layers cover the door, yet provide access.  
Ductmate Photo.

Pre-fabricated access doors are easier to install in new construction as well as existing buildings. Doors can be purchased in a number of sizes to fit both rectangular and round ducts. Installation can be completed in the shop or on the jobsite in minutes

versus hours of field fabrication. Some doors even include a self-adhesive template for locating the door opening on the duct. Once the hole is cut, the door slips into place.

These grease duct access doors are designed for high temperature, leak-proof application and are constructed of 11 gauge black iron for strength. The door assemblies are approved to the UL 1978 standard and the gasket is designed for temperatures up to 2,300°F with no leakage.

When grease ducting is in close proximity of combustible materials, the ducting and access doors must be insulated to prevent the spread of fire to the structure. Today's new high temperature insulation products are tested 2,000°F and can allow duct mounting to zero clearance.

Having a prefabricated door tested in conjunction with the high temperature insulation offers the best assurance the doors will perform as specified. The door/insulation system testing can be conducted by Intertek Testing Services as a single system and meet AC101 (ASTM E2336) test standard requirements.

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When a reputable hood cleaner is asked to start a cleaning project, its initial inspection may reveal the lack of access to the duct interior. The cleaner may well insist on the installation of as many doors as needed to perform the job properly. The fastest and most cost effective way to accomplish this is with specifying the pre-fabricated doors at initial construction. If not installed initially, they can be retrofitted, as can the field fabricated door.

Field fabricated doors usually require a sheet metal contractor because of the skill level necessary for the process. Installing a pre-fabricated access door can easily be done by a company that understands both the grease duct and the fire resistance required for the door.

They simply adhere the door access hole template, cut the opening and install the door. Depending on the accessibility to the site, total install time can be as little as 20 minutes. Simple installation also means less chance for an installation error, which can prove costly for the contractor.

Continuity of the access door to the duct wrap is very important. When the fire-resistance-rated access door is installed, the grease duct wrap manufacturer must have a compatibility listing for the door in the fire-rated grease duct enclosure system.

But the real savings is during the cleaning process! Door removal takes minutes because no tools are required. Size and placement of doors ensure all surfaces can be reached for a thorough grease-free cleaning with no sections bypassed. Door replacement is equally fast with no limit to the number of open/close cleaning cycles.

Easy access will generally mean shorter cleaning time, which should result in lower cleaning prices. When the process is more affordable, it can be done with greater frequency and by additional kitchen owners. In the end, that means a safer healthcare facility.

*Vince Bloom, Engineer for Ductmate Industries, has worked for the company for over 14 years and holds the patent on the ULtimate™ high temperature access door with other patents issued and pending. He can be reached at 800-245-3188 or email to vbloom@dmicompanies.com. 🔥*

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# Industry News

## FCIA Receives NAICS Code for Firestopping

The North American Industry Classification System (NAICS) replaced the old Standard Industrial Classification System (SIC). NAICS is used for classifying businesses for the collection, analysis and publication of statistical data related to the business economy of the US.

Several years in the making, 'Firestop Services' has been added to the 238310 classification titled 'Drywall and Insulation Contractors'. The North American Industry Classification (NAICS) US Government Committee obtained agreement from Mexico and Canada that existing System index items associated with the primary activities of firestop contractors be moved into Industry 23831, Drywall and Insulation Contractors.

The first place firestopping shows up is in the proposed definition text, "Establishments primarily engaged in providing firestop service are included in this industry."

Translation, Firestop Contracting is now recognized by the US Federal Government. This new listing will appear in the 2012 US Federal Register as 'firestop services' and 'primary activities of firestop contractors'. This is but one more step the association has accomplished to having the firestopping trade defined as a separate trade, with knowledgeable contractors required to get things right.

FCIA's Membership Committee (Bill Hoos) and Apprenticeship Committee (Bob Hasting) worked together on this important development. All government work is contracted using these codes. Look for this sometime in early 2012 in the printed version of the Federal Register, and online later in 2012.

## FCIA Worldwide Educational Seminars



FCIA announces another educational seminar in Abu Dhabi, United Arab Emirates on Oct. 16 and 17. Key addresses will bring knowledge on the new Abu Dhabi National Building Code to civil defense, architects and specifiers, consultants and contractors.

Education on firestop system design standards such as ASTM E 814-UL 1479 for Penetrations, UL 2079 and special program on ASTM E 2307 for Perimeter Fire Containment as they pertain to the new code will be covered.

Why hire an Approved or Qualified Contractor? Installation with FM 4991 Standard for the Approval of Firestop Contractors, UL Qualified Firestop Contractors brings value through savings in inspection costs. Learn

what it takes to attain and specify this certification.

How can it be verified that the firestopping has been installed for reliability? Inspection standards ASTM E 2174 and ASTM E 2393 have the important process for inspecting firestopping. When the Inspection Agency is AC-291 Accredited, it brings a knowledgeable and audit verified consultant to the process. Learn about inspection protocol from the experts.

FCIA's educational seminar in Dubai and Abu Dhabi, and conferences in USA, Montreal and Toronto have been well received by FCIA members, building officials, fire marshals, civil defense, specifiers and key building owners over the past several years. Don't miss this. Watch FCIA.org, events page for info.

## Concrete Block Goes Bigger Face and Lightweight

According to the Masonry Advisory Council article by Jeff Speck, Big River Industries, concrete block manufacturers are making lighter weight Concrete Masonry Units (CMU).



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A 24" block unit is 50% more face area than traditional 16" units, yet is a bit lighter than the traditional 16" block. The Masonry Advisory Council states that all the benefits of traditional CMU units including structural load bearing and shear walls, superior fire resistance, durability, water resistance.

Since the 24" lightweight CMU weighs no more than a 16" unit, it can be applied by one person, rather than normal weight which may require two.

Up to two hour fire resistance is provided with a 35lb 8x8x24 lightweight CMU, with an equivalent thickness of 3.8", while a 38lb 8/8/16 CMU requires 4.2" thickness. For a complete article on the products, visit <http://www.masonryedge.com>.

### **CDC Issues Infection Prevention Guide, Checklist for Outpatient Settings**

The Centers for Disease Control and Prevention issued an infection prevention guide and checklist for outpatient care settings. Based on existing CDC guidelines for hospitals and other health care facilities, the tools can help endoscopy clinics, surgery centers, primary care offices and other outpatient care providers assess their adherence to recommended infection prevention practices. For more information, visit the

CDC website on health care-associated infections in outpatient settings. <http://www.cdc.gov/HAI/settings/outpatient/outpatient-settings.html>

### **Lightweight Fire Rated Gypsum Panels**

USG Corporation recently introduced its SHEETROCK® Brand UltraLight Panel, FIRECODE® X. This 5/8-inch panel weighs up to 15 percent less than competitive type X board. USG also launched the SHEETROCK Brand UltraLight Panels FIRECODE30, a 5/8-inch board for nonrated and 30-minute fire-rated partitions, in June 2011, ready in time for the 2012 International Building Code Requirement that allows 30 minute fire resistance rated construction.

The new gypsum panel meets ASTM C1396 requirements for gypsum board, type X. Additionally, this is the first lightweight panel listed for use in more than 130 UL fire-resistance rated assemblies. The product is designed for use in areas where a fire-resistance rated assembly or type X gypsum board is required.

SHEETROCK Brand UltraLight Panels FIRECODE X is being introduced in the northeastern United States. SHEETROCK(R) UltraLight Panels FIRECODE 30



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### GA-620, Gypsum Area Separation Firewalls

The Gypsum Association has recently posted an electronic version of its latest publication GA-620, Gypsum Area Separation Firewalls, at [Gypsum.org](http://www.gypsum.org). Download at <http://www.gypsum.org>.



### 2011 Building Code Requirements and Specification for Masonry Structures Now Available

The National Concrete Masonry Association (NCMA) announced the 2011 edition of the national masonry design code and minimum specification is available from the NCMA bookstore. It represents a major update from the 2008 edition, both in technical requirements and in layout. This edition will be referenced by the 2012 International Building Code for the design and construction of structural masonry, veneer and glass unit masonry. It has been updated to be consistent with the requirements in ASCE 7-10, Minimum Design Loads for Buildings and Other Structures, which includes a new strength basis for wind loads. <http://secure.ncma.org/source/Orders/ProductDetail.cfm?pc=TR106D>

### FCIA at ASHE

FCIA's Marketing Committee led by Don Murphy showed the new FCIA Trade Show Booth Banners at the American Society of Healthcare Engineers Show in Seattle with the new banners July 17 & 18. FCIA Members can pay the shipping, and get the far left side banner with FCIA Logo for local shows, free, as a member benefit.

McGraw Hill reports that the Health Care Construction Market could grow 16% in 2012 to about \$28.5 billion, and is the reason FCIA's Marketing Committee chose to display at ASHE.

### FCIA Receives Compliments

While at the NFPA, ICC, and other shows, there were several organizations developing, considering, or just launching 'Contractor Accreditation Programs' for contractor companies.

The comment, 'we looked at FCIA's programs for the example' was heard several times. The Residential Sprinkler Programs, Sheet Metal (union sheet metal contractor program), and more are in the

marketplace now. It's a real compliment that FCIA's collaborative work to develop FM 4991 and the UL Qualified Firestop Contractor Program has been noticed by large organizations.

Check out the FM 4991 Approved Contractors & UL and ULC Qualified Firestop Contractors at <http://www.fcia.org>, under FM Approval or UL Qualification.

### NIST Releases Report of Sofa Super Store Fire

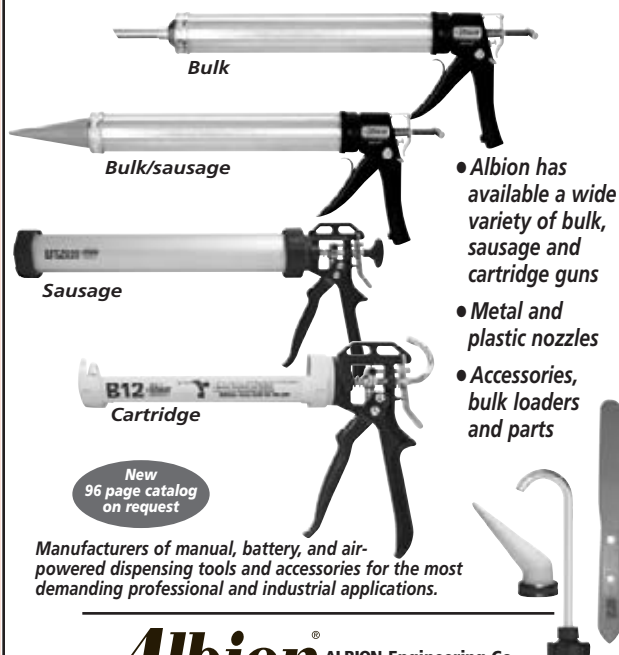
The National Institute of Standards and Technology (NIST) has released its final report on the June 18, 2007, fire at the Sofa Super Store in Charleston, S.C. That fire trapped and killed nine firefighters, the highest number of firefighter deaths in a single event since 9/11. Based on the findings, 11 recommendations resulted that, if implemented, help make better building, occupant and firefighter safety nationwide. Visit [http://www.nist.gov/el/fire\\_research/20110315\\_charleston.cfm](http://www.nist.gov/el/fire_research/20110315_charleston.cfm)

### Life Safety Organization

The LSO had a great webinar on Fire Doors in June, and has another planned for presentation by FCIA on Firestopping, Sept. 21. Watch for a LSO Conference in early 2012. 🔥

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# Code Corner

## ICC 2015 Code Cycle Starting

The International Code Council (ICC) has already started on the 2015 code development cycle. Code committees are being formed this fall, while code proposals are due Jan. 1, 2012 for Group A, and Jan. 1, 2013 for Group B. Group A includes International Building, Fuel Gas, Mechanical, Plumbing and Private Sewage Codes. Group B includes International Existing Building, Energy Conservation, Fire, Green Construction, Performance, Property Maintenance, Residential, Swimming Pool and Spa, Wildland-Urban Interface, and Zoning Codes.

Anyone can submit a code proposal. Visit <http://www.iccsafe.org> for forms, under Codes, Code Development.

## Abu Dhabi Readies for ICC Codes in the United Arab Emirate

The Department of Municipal Affairs (DMA) and the municipalities of the Emirate of Abu Dhabi are assessing the readiness of thousands of engineering consultancies, contractors and developers to adopt new International Building codes planned for the emirate. More than 40,000 construction industry professionals will be asked to participate in telephone surveys or online questionnaires as part of a major consultation campaign designed to support the smooth implementation of new regulation.

Commenting on the survey, H.E. Rashid Mubarak Al Hajeri, Chairman of the Department of Municipal Affairs and Chairman of the Abu Dhabi building codes Higher Council said: "The imminent introduction of the new Building Codes represents a major change to building construction practices in the Emirate of Abu Dhabi which will create quality buildings that are safe and sustainable. These codes will also protect construction investments from an economic perspective."

The survey forms part of the DMA's ongoing industry engagement program that has already seen more than 1,500 professionals from across the UAE construction industry take part in one or more of the 50 training sessions that have been organized over the last year.

Summing up the focus of the survey, His Excellency Ahmed Shareef, Undersecretary of the DMA added, "The introduction of the new Building Codes comes as part of our leaders' vision and guidance to implement the best sustainable standards in developing the Emirate, which brings us one step closer towards a new era in construction quality that will introduce world class standards and best practices. This survey reflects the DMA's commitment to achieving the Emirate's 2030 vision in making Abu Dhabi a better place for residents, investors, and visitors."

## NFPA Codes finalized

FCIA attended the NFPA convention in Boston in mid-June. The NFPA Association Conference had reports from NFPA committees, and also hearings for motions from the association. During the meeting, the motion from the International Firestop Council and Fire Rated Glazing Industry (FRG) was heard by the membership. Testimony

from IFC's Tony Crimi and the FRG's Thom Zaremba was supported by Jim Lathrop of Koffel Associates. Although the membership overturned action of the committee and supported Crimi and Zaremba, the NFPA Fire Protection Features Committee denied the request again during rebalot. An appeal to the Standards Council brought a decision to uphold the committee, denying the request.

## Fire Prevention Week

NFPA promotes Fire Safety Week Oct. 9-15. There are some great pieces at NFPA's Web site for educating people about fire safety, emergency exit routes, using appliances; and educating the young, old and disabled, and much more.

Life Safety Digest & FCIA recommend that the public learn more about and demand Total Fire Protection in buildings. Total fire protection means effective fire-resistance-rated compartmentation supported by rated floors, columns and beams, stairwells and hallways with walls and floors that have all penetrations and joints fire-resistance-rated and smoke-resistant, coupled with detection and alarms, and sprinklers all designed, installed, inspected and maintained for performance when called upon. Visit [NFPA.org](http://NFPA.org), and click on "Fire Prevention Week."



Reproduced from NFPA's Fire Prevention Week website, [www.firepreventionweek.org](http://www.firepreventionweek.org). ©2011 NFPA

## SPECIAL International Green Construction Code (IgCC) Report

The International Code Council (ICC) has been working on the development of the International Green Construction Code (IgCC) for over two years. The code is an "overlay" code, in that it is in addition to the other family of building codes, International Building Code, International Fire Code, etc.

From a small group assembling a document that served as a "base," named IgCC Version 1.0, there were hearings in Chicago, in August 2010. The result of those hearings—with over 1,500 comments—was IgCC Public Version 2.0.

Just like the rest of the ICC Code Development Process, ICC's process brought code development committees together, with staff receiving public comments, in preparation for the IgCC Code Hearings in Dallas, May 16-21.

The Dallas hearings had over 1,250 code proposals vetted by two different code committees for just under a week.

There were several proposals that had an impact on much of the construction markets, including fire resistance. The key proposals dealt with the Building Service Life Plan,



using higher fire-resistance as a reason for sustainability, and eliminating certain chemicals (formaldehyde) altogether from building products. In this Life Safety Digest Code Corner, we'll cover Building Service Life Plan.

### Background on Building Service Life Plan

In IgCC Public Version 2.0, FCIA observed that the **Building Service Life Plan** in Chapter 5 brings new requirements for product life cycle sustainability from manufacture and disposal to in service life for the product. Chapter 5, "Material Resource Conservation and Efficiency," covers a lot of ground.

First, in Section 502, there's a Construction Material and Waste Management plan. The plan must outline how not less than 50% of non-hazardous construction waste shall be diverted from landfills.

Materials are to be diverted from disposal by efficient usage, recycling, reuse on the project, or salvage for future use or sale. This all has to be specified and communicated through construction documents to the contractor. There are questions that will come up as the code is implemented.

How do we document this? Who is going to verify that 50% of non-hazardous construction waste by weight or volume was eliminated?

Additionally, in Section 503.2, Material Selection, that not less than 55% of the total building materials used in the project, based on mass or cost, shall comply with requirements. Requirements include recycled content building materials, with options to comply.

Options are to contain not less than 25% combined recovered material, not less than 50% recovered material, or contain not less than 50% combined post-consumer, pre-consumer recovered material. And, Building Materials shall be manufactured with a minimum 30% recovery rate through recycling as well.

The biggest part of this for many industries is the "Indigenous Material" section, 503.2.5 that requires materials to be "recovered, harvested, extracted and manufactured within a 500 mile radius of the building site." Mileage extensions are given for rail and water transport.

The code is also very clear in this chapter that the minimum service life expectancy of products is 25 or 60 years...or more, depending on jurisdictional options chosen.



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In Section 505, "Service Life," there is a requirement for the "Building Service Life Plan." Section 505.1.1 specifies the design service life of the products installed in the core, shell and site hardscape constructed under this code comply. The basic design service life is 60 years, with options to reduce to 25 years when a dismantling, de-mounting and re-use plan is included.

Since fire-resistance-rated products protect the core and shell of the building, they most likely are included and must conform to this section. Plus, any products that become 'concealed' may be subject to service life requirements as well.

The Building Service Life Plan is also supposed to incorporate a maintenance, repair and replacement schedule for each building component, "based on manufacturer's reference service-life data, or other approved sources."

### Now the Debates

At the Dallas hearings, code proposal GG150-11, suggested an alternative to the Building Service Life Plan that 55% of the materials must have: the recycled content, be 'used', bio-based or indigenous, or that an analysis demonstrate that the building will provide no less than a 10% improvement in primary energy use, and no less than a 5% improvement in environmental performance based on prescribed guidelines...in addition to the 25 year minimum service life.

The question the IgCC begs to be asked is, how is the "minimum service life" proven to the building official?

Is the specifier demanding submittal data that shows in-place testing or performance to the 25 or 60 years?

Is the manufacturer going to provide, then specifier / AHJ accept a warranty for 25-60 years? Are independent laboratory tests required to prove aging characteristics?

In section 505.1.2, the code states that "the plan shall verify that the interior materials, components and assemblies have a minimum service life of 25 years."

The industry challenge is to develop proof sources acceptable to the AHJ that the product performs as specified by the code.

Contractors, specifiers, building owners and managers will all need to understand the service life of products used in areas where a service life is specified by the IgCC. There will be documented proof needed from manufacturers that products used in these areas meet code requirements.

Some industries have already started the validation process. For instance, the Gypsum Association has hired the Athena Institute to perform validation of gypsum sustainability.

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## What's the Timeline?

While at the IgCC Code Hearings in Dallas, May 15-21, we heard of major cities and several states adapting the IgCC in early 2012. The States of Rhode Island and Maryland have already adopted a draft version of the code.

The report on the May hearings has been published, and public comments are being assembled by ICC staff for the IgCC Final Action Hearings in Phoenix, Nov. 2-6, at the ICC Annual Conference.

It is cool being green from a marketing perspective for communities. Economic development agencies want to separate one municipality from another competitively. Look for this code to be one way municipalities may compete for construction development in their areas. 🔥

# Life Safety Digest

## 2011 Industry Calendar

### Sept. 13 to 16

CONSTRUCT2011, CSI Annual Convention, Chicago

### Oct. 9 to 15

Fire Prevention Week

### Oct. 16 to 19

FCIA Educational Conference in Abu Dhabi  
(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. 6

ICC Annual Conference & International Green Construction Code Final Action Hearings, 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

### Dec. 12 to 14

Fire & Life Safety Conference, Orlando



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