

Summer 2015

The Magazine of Effective Compartmentation



Life Safety DIGEST

In This Issue:

Fire Barrier Management & "A Call to Action"

**Total Barrier Management Reduces
Airborne Infection Risk in Healthcare**

OSHA Fatality and Injury & Reporting

Firestopping is Critical in Hospitals

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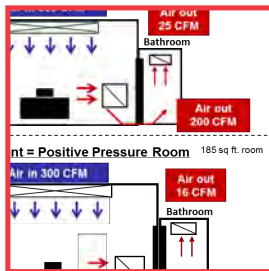
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On the Cover: Opening for patient care on August 20, 2015, the state-of-the-art Parkland Hospital Dallas, TX, USA teaching hospital uses advanced digital technology and was constructed with sustainable, green building methods. Architect: HDR + Corgan
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Editor's Message

What makes healthcare occupancies special? It's the contents. People come to healthcare facilities for a lot of reasons. They may not be able to move under their own power upon entering the structure. They may be attached to wires, gasses or liquids making movement while in the structure not very likely. And, the occupants and their families expect privacy, and a safe, healing environment.

That's why healthcare facilities are special. They are also special because of the requirements needed to build and then manage these facilities. They are the most regulated facilities in the built environment, save nuclear power plants.

This issue dives into the healthcare facility topic in-depth with articles on why the firestop contractor needs to lead in barrier management and what is available in existing buildings to document the fire resistance rated firestopping and features of fire protection. Another article looks at a related issue, infection control. Air carrying germs can spread in buildings affecting those who have compromised immune systems. A great case study shows how Parkland Hospital used a barrier management program during the construction process for Documentation.

This issue of Life Safety Digest is focused on healthcare facilities. The next several issues will also

have articles in them that are best practices applicable to many other building occupancies.

FCIA believes that when combining effective code regulations and good specifications, plus enforcement in the field, means the DIIM of Effective Compartmentation (Design, Installation, Inspection, and Maintenance-Management) has taken place. Through the DIIM, more reliable building safety can be achieved meaning less lives are lost to tragedy, regardless of the occupancy.

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

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Fire Barrier Management & “A Call to Action”: Why Firestop Contractors Should Be at the Table

By Aideen Doneski

As leaders in our field, we are continually striving for excellence. In the early 1990s, a small group of firestop contractors recognized the need to professionalize the industry – a professional organization to provide a space to share ideas, develop best practices and advance the firestopping industry – the Firestop Contractors International Association (FCIA) – was born.

In 1999, FCIA members again recognized the need for improved standards in the firestopping industry. Over a span of 15 years, both the Factory Mutual (FM) 4991 Approved Firestop Contractor Program and the Underwriters Laboratories (UL/ULC) Qualified Firestop Contractor Program were developed and introduced to firestop contractors, specifiers and building owners across the United States, Canada and the United Arab Emirates.

Now, in 2015, we have the opportunity to again help shape the industry. Fire Barrier Management Programs are quickly becoming the industry standard, and firestop contractors are in the unique position to help guide and shape these programs for the better. As FM 4991 Approved and/or UL/ULC Qualified contractors, we have the expertise to help our customers find solutions to the extremely complex nature of healthcare buildings and facilities. We have the knowledge to select the right firestop system for the application, ensure its proper installation and maintain the hourly rating and integrity of any fire rated assembly.

However, our customers are beginning to expect more when they hire a specialty firestop contractor. We are no longer just being asked to perform the work on time and under budget. In addition, we are asked to document our work, commission installations and ensure the long term compliance of their fire, smoke and other barriers. This is an extremely exciting development for the firestop industry. After 25 years of demanding excellence from firestop contractors, we have developed a reputation for quality, expertise and problem solving.

Through the work done with healthcare facilities over the years, a five-step barrier management program has been developed that is believed to be the most comprehensive in the field:

- Policy & Specification
- Permitting
- Installation
- Commissioning
- Documentation & Reporting

Each of the steps is a crucial component of properly maintaining fire barriers throughout the life of a building. We talk about it like links in a bicycle chain – everything needs to be connected and working in order to move forward.

In addition to the five steps, we’ve also learned some keys to success that should be in place at the healthcare facility in order for a fire barrier management program to be both successful and sustainable. They include:

- Keeping customers involved and informed – reaching out to customers during new construction and providing long-term solutions for existing buildings is important.
- Leveraging “Champions” within the organization – many clients “get it” – they’ve been through the process enough to know the benefits of implementing a fire barrier management program.
- Offering educational lunch and learns for customers, their staff, and contractors – education is key to a lasting program.
- And, most importantly for contractors, figuring out a documentation system that works well.

The area we see most barrier management companies fail is in the documentation process. Many contractors offer documentation services, and try to manage it with pens and paper, Excel documents or perhaps more advanced Access databases. While this can work for smaller customers and one-time projects, we have yet to see it work as a long-term solution. It becomes cumbersome and inefficient, and is often managed by one person who knows where everything is – no one else knows where to find, use or manage the information collected. There’s no standardization, no sharing of information, and getting access to high-level summary data can be extremely difficult if not impossible. Inevitably, information gets lost in translation – sheets of paper are misplaced somewhere between the field and the office or data is incorrectly sorted in Excel (if you’ve ever done it, you know it can’t be undone!). You lose a full day trying to provide a simple report requested by your customer.

As leaders in fire barrier management, firestop contractors need to embrace technological advances in the construction industry and provide cutting-edge, innovative solutions to our customers. Software designed specifically for this industry is crucial to our long-term success and relevance.



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Fire barrier management software allows for a standard way of collecting, analyzing and using information gathered in the field – for firestopping as well as other features of fire resistance that create effective compartmentation. It allows our customers to have access to overview information about the fire rated assemblies in a building, as well as granular level detail about each condition. A good software has a permitting system built in to it, so that every new condition is tracked, addressed and updated. Instant and customized reports allow for information to be disbursed instantaneously – your customers can easily log in themselves to get exactly what the need.

accountability and information, the only way to do this properly is with a full fire barrier management program.

All of this is a good thing for firestop contractors. As FM 4991 Approved and UL/ULC Qualified Firestop Contractors, we have the skills needed to provide the services, and the expertise to help shape best practices. We know firestopping better than anyone else – we see it day in and day out. Our challenge as firestop contractors is to harness this opportunity, to continually strive for improvement and to provide innovative solutions for our customers – and, in doing so, shape our industry's future. 🔥



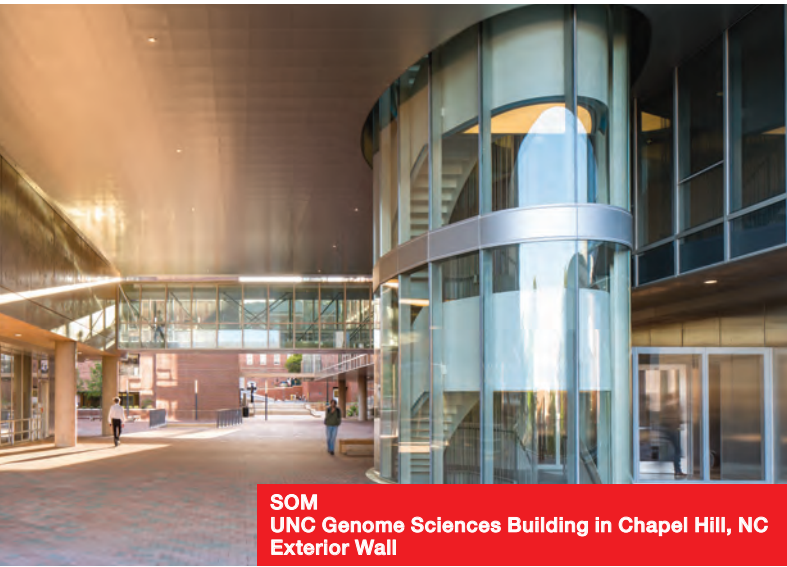
The Life Safety Tracker is a Barrier Management Program. Gleeson Powers Photo.

Up until recently, these features have been considered ahead of the curve – a “cut above the rest”. However, as the FCIA, The American Society for Healthcare Engineering (ASHE) and The Joint Commission continue to push for excellence through their Barrier Management Symposiums, our customers are starting to expect the best.

As firestop contractors, it is our job to provide a solution for our customers that allows them to maintain their fire and smoke barriers - this requires knowing where their fire barriers are, knowing what penetrates them, being aware of any work that will impact them, and being confident but that upon completion they have been properly protected against fire, smoke or other contaminants. In this age of

Aideen Doneski is director of administration & business development with Gleeson Powers Inc., a fire barrier management company specializing in firestopping and fireproofing, fire damper and fire door inspections and other life safety services. The company has been in business since 1992, developed the Life Safety Tracker System® and is FM 4991 Approved and UL Qualified. Gleeson Powers works with healthcare facilities to develop, implement and execute practical life safety solutions to ensure code compliance and proper fire barrier management. For more information, contact us at (888) 884-3590, aideen@gpi-firestop.com, or visit www.gleesonpowers.com.

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Total Barrier Management Reduces Airborne Infection Risk in Healthcare

By Andrew J. Streifel, MPH, REHS

We consider controlled ventilation for comfort as truly the objective for the majority of hospital patients. However, without proper ventilation management, airborne spread of infectious diseases becomes a major concern as a mode of transmission extremely difficult to control. Infectious disease outbreaks in hospitals are now documented and their mitigation is dependent on triage to recognize and isolate for the purpose of successful control.

Also, today with H7N9 in China showing a potential uncertain mode of transmission we must be vigilant with regard to new variants of such diseases as they continue to evolve.

CDC Environmental Infection Control Guidelines 2003

Table 4. Microorganisms associated with airborne transmission*

	Fungi	Bacteria	Viruses
Numerous reports in health-care facilities	Aspergillus spp.+ Mucorales (Rhizopus spp.)	Mycobacterium tuberculosis	Measles (rubeola) virus Varicella-zoster virus
Atypical, occasional reports	Acermonium spp. Fusarium spp. Pseudoallescheria boydii Scedosporium spp. Sporothrix cyanescens	Acinetobacter spp. Bacillus spp. Brucella spp. Staphylococcus aureus Group A Streptococcus	Smallpox virus (variola) Influenza viruses Respiratory syncytial virus Adenoviruses Norwalk-like virus
Airborne in nature; airborne transmission in health care settings not described	Coccidioides immitis Cryptococcus spp. Histoplasma capsulatum	Coxiella burnetii (Q fever)	Hantaviruses Lassa virus Marburg virus Ebola virus Crimean-Congo virus
Under investigation	Pneumocystis carinii		

The efforts to manage the above listed diseases will also help hospitals prepare for the uncertain presentation of patients whose potential for propagating airborne spread disease is uncertain. Within the past year for example, marked increases in measles and drug resistant tuberculosis among homeless persons in Minnesota and North Dakota have strained the preparedness management to provide a sufficient number of airborne infection isolation rooms. In addition, 4500 TB exposed homeless in Los Angeles and 2200 measles exposures in England show these events continue to occur around the world (CDC-MMWR).

<u>Droplet nuclei <5um particles</u>		
		EMERGENT DISEASES
*Tuberculosis	*Measles	SARS
*Chicken pox	*Smallpox	MONKEY POX
*Disseminating H. zoster		ANTIBIOTIC RESISTANT MICROBES

The medical literature has numerous examples of diseases spread due to lack of ventilation control.

Airborne chicken-pox transmission was discovered by LeClarie at Boston Children's in 1984. This outbreak was due to open doors and windows.

Small pox transmission occurred in Germany in 1972. This outbreak was due to an uncontrolled hospital ventilation system and a highly infected patient spewing out infectious particles due to oral lesions caused by a smallpox infection.

Patients today are carefully screened but still most hospitals are faced with challenges from resurgent diseases like tuberculosis, measles and occasionally polio. But while the exposure potential in general is diminished through better public health this doesn't address the specific safety concern associated with assurance that a hospital is

ready for a patient or group of patients at any given time.

Saravia provided a state-wide service to evaluate AIIR rooms in Minnesota hospitals to determine the functionality of those rooms in light of pandemic preparedness. The observed lack of functionality was an eye-opening experience, which made clear the need to assure through validation the functionality of AIIRs.

The parameter necessary for control of aerosol movement is pressure. Pressure management is contingent on consistent airflow direction from the clean air quality source to a less clean air quality environment. An inconsistent airflow direction will create time consuming epidemiological analysis if

a patient becomes infected with an airborne spread disease such as measles, because once discovered the patient's exposure contacts also become a potential spreading for a secondary cluster of disease amongst patients and employees. If the airflow is inconsistent, then those passing in the corridor around the malfunctioning AIIR must also be "worked up" for exposure/disease potential.

Hermans in 1994 used a term quanta derived from infectious disease experts to help define an infecting dose of infectious particles. A patient generates particles that could be infectious through the generation of droplet nuclei that move with the air currents. Quanta generation depends on the airborne disease presentation in patients.

If the patient has mouth sores the potential for airborne transmission from the mouth is enhanced. Quanta generation rates range from 1 q/hr with a TB patient resting to 249 for a TB patient during coughing after bronchoscopy. These uncertain exposures can catch a hospital off guard in the preparation for patient isolation.

Ventilation parameters AC/hr, filtration and pressure are essential for maintaining air quality safety (Marshal). In addition

the dilution of air to achieve room air exchanges with highly filtered air does even more to reduce the probability of breathing an infectious particle. The ventilation offset with a greater exhaust than supply air volume will help to contain and move air towards the extractor part of the patient room. However assuring proper pressure with appropriate airflow direction is the essential component of containment or exclusion via the airborne route of infectious particles.

Maintaining these ventilation principals is difficult for a variety of reasons (Saravia). Most often a lack of priority was due to no immediate threat from an infectious disease event.

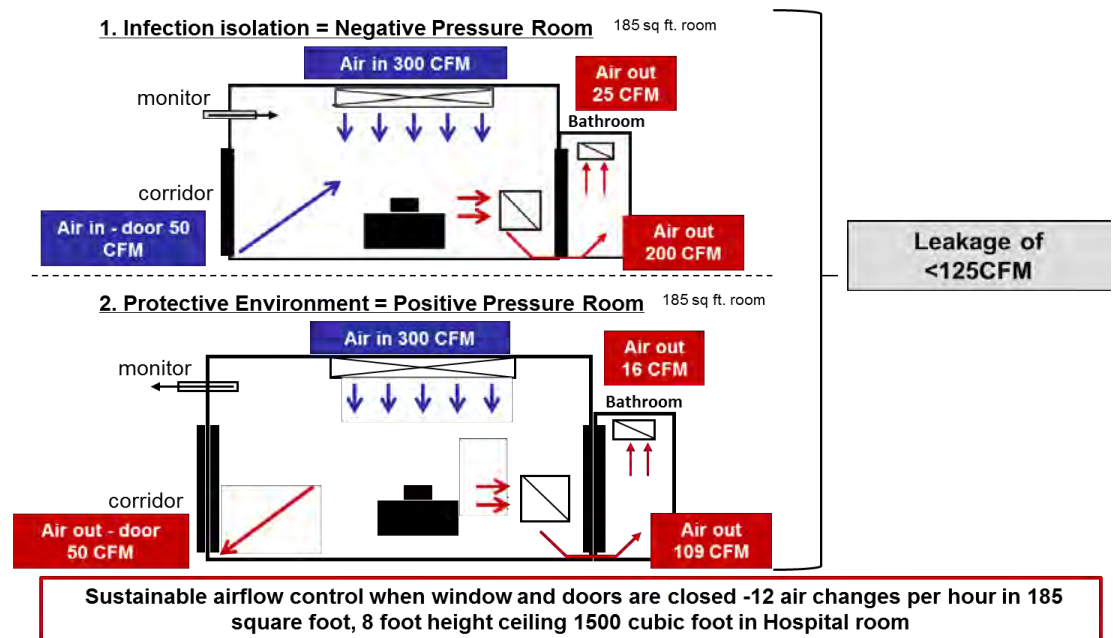
It is considered best practice to be sure that each hospital in the USA has a room for isolation of infectious disease that is a totally functional AIIR. Functional performance, which maintains a constant

pressure differential (especially in the negative pressure AIIR) is essential for containment of infectious patients. If the ventilation offset difference of the supply and exhaust is insufficient, the intensity of the pressure will be reduced.

Therefore, an offset of at least 125 cfm is recommended to control the airflow direction but if the room is not sealed and has leakage points that performance will not be satisfactory. When air volume is offset to have excess air extracted from a room, infiltrating air tries to fill the void caused by suction. But the air supply for such exhaust systems will be variable and uncontrolled in an unsealed room. Windows and doors must be self-closing for performance assurance. The offset of supply and pull air must be substantial, ideally enough to extract air under the door to the room and pull the difference in the offset volume there isn't enough supply air to the respective AIIRs.

Saravia's study was undertaken to prepare Minnesota for pandemic events by having performance validated airborne infection isolation rooms. Since the discovery of these AIIR inadequacies, means and methods for validation have been substantiated by regulatory agencies such as OSHA. We should trust good design but verify functional performance.

Air flow control CDC guidelines <125 CFM leakage.



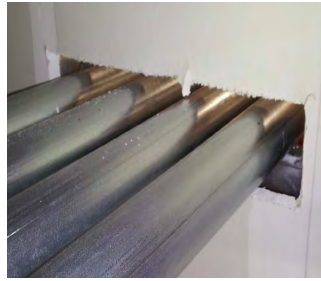
Note: This depiction indicates a minimum ventilation scheme for AII and PE rooms without the design considerations for cooling and heating loads. Volumes of air will vary but the offset should be similar.

So, if there are leaks around wall penetrations such as plumbing, lights, medical gas, electrical boxes, ethernet conduits and other unsealed penetrations like ventilation ducts, they should be sealed.

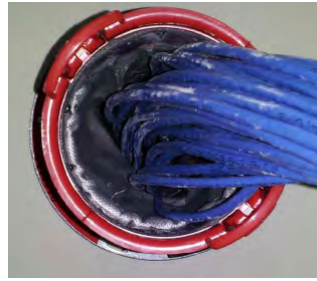
Typical Leakage Areas In Patient Rooms



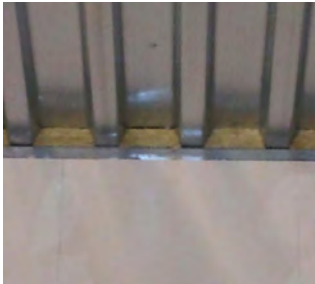
Copper Medical Gas Lines



EMT Lines



Cable Bundles



Top-of-Wall Joints



Electrical Boxes



Bottom-of-Wall Joints
Author Photos

In 1997, Rice studied room pressure and found very weak pressures in a modern hospital. It was noted that substantial leakage in the rooms was found at the doors, ceilings and utility openings.

In an experiment using a blower door apparatus for testing for leakage, it was discovered that a well-sealed protective environment (PE) room was substantially sealed better than an AIIR. When a pressure of 50 Pascals was applied to the room the PE room leaked 150 cubic feet per minute while the AIIR leaked 1500 cfm with the same pressure. Perforated plate metal pan ceilings, unsealed doors and utilities comprised the majority of leaks.

The PE rooms in the University of Minnesota Medical Center construction was supervised by this author in 1986. At that time, we had a crude understanding of the sealing process that existed in 1986 when the hospital was first occupied. But we did not understand the difficulty of maintaining the negative pressure AIIR as related to the concept mentioned above regarding leakage areas.

Since then, we have tested many rooms using the blower door methodology and found rooms used as AIIR had substantial leakage above the ceiling. For example, we attempted to demonstrate that with the lay-in ceiling completely closed and no special seal for the lay-in tile grid the room had 84 square inches of EQLA (Equivalent Leakage Area @ 10 Pascals) but when a tile was removed the EQLA went to 233 square inches and allowed for over 2100 CFM airflow out of the ceiling space. AIIR patient room air is exhausted but will short circuit the air it can suck from the

openings found in the ceilings. That is why ceiling must be properly planned and sealed.

A well-sealed room will pull about 100 CFM excess air from leakage at 0.01 inches WC. The issue is ventilation efficacy. If we can control the extraction we should be able to retain the infectious aerosol with greater efficiency. With adequate extraction comes the need for controlled intensity. How much pressure is really needed?

There is a discrepancy among experts as to exact pressures necessary to contain a

infectious aerosol. Aventis at Berkley was able to show control of common indoor air particles with pressures between 0.02(5 Pa) and 0.03(7.5Pa) inches water column to control ambient airborne particles. Particles can be a good surrogate to demonstrate containment. But it is difficult to suggest that 15 Pascals or event 30 Pascals would contain any better. Such pressures would be problematic in certain climates. Saravia did show increased particle counts in rooms used as AIIR. The higher counts indicate infiltration of untreated air being sucked into the patient care room through leaks. Observations by this author has seen excessive condensation promoting mold growth and very high particle counts in critical hospital areas due to imbalances caused by uncontrolled pressure management.

As we consider what happens to a room as it is sealed we should step through the process of sealing a room. In Minnesota the Local Brotherhood of Carpenters agreed to assist with a demonstration of room sealing in recognition of the potential importance of this concept in achieving better ventilation control. This room was constructed as a demonstration for "best practice" in construction management practice working in hospitals. It is common to specify a sealed room. Yet, how should it be specified for construction documents? ASHRAE STD 170 tries to define the requirement but it, too, is based on the functional performance of the PE and AII rooms.

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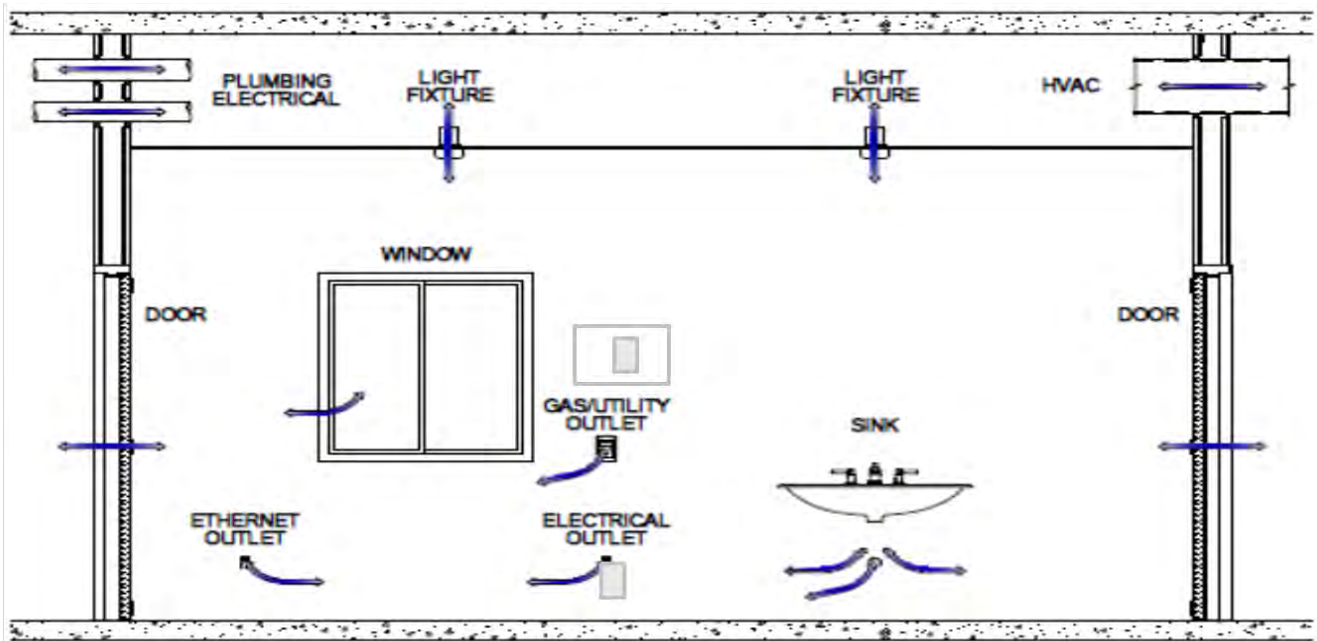
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Patient Room Leakage Application Areas



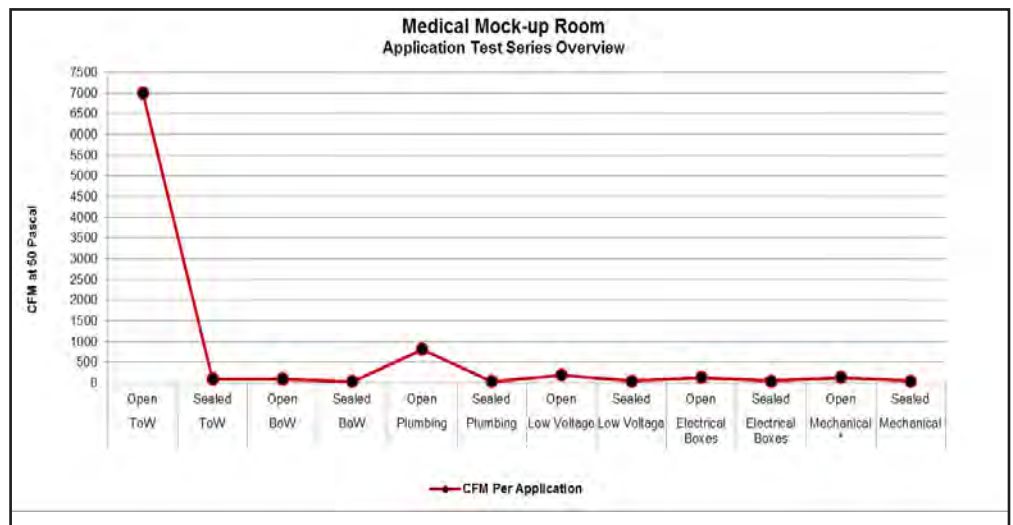
“The room envelope shall be sealed to limit leakage air flow at 0.01 in.wc (2.5Pa) differential pressure across the envelope.” However, ASHRAE 170 definition is a not useful as an objective definition such defining the actual leakage in air volume as EQLA.

When we consider construction of a special ventilation room with all of the penetrations, we should know the importance of sealing of the walls, utility connections and other wall penetrations because of the understanding that the flow of air (infiltration/exfiltration) has on the impact on effective ventilation. The table below shows the different seal points (top or bottom of wall) before and after seal. Looking at the Top Wall data on the opening and closing of that hole around the utility connection. A sealed application will help maintain a consistent pressure of >0.01” WC. As the room was sealed a sharp reduction in airflow leakage was observed. Once the obvious seals are eliminated, a basic room (as a box) final seal occurs at about 41 CFM @ 0.01”WC.

What is the ideal room seal at 0.01”WC? Ideally a leakage rate of around 50 cfm would profile a very tight room but realistically with the proper training of the installers should be able to seal the room to leakage of 125 cfm @ 0.01”WC, based on recommendations provided by the CDC. MMWR June 6, 2003. With a tight room seal we can

demonstrate open penetrations and once closed the various penetrations show an obvious difference.

A standard patient room sealed may have up to 40 room utility penetrations. Penetrations in the room shall allow air to infiltrate in an AIIR due to the extractor air volume. For many years in a hospital occupied in 1986 AIIR did not work correctly because it was thought that there was little or no pressure differential in UMMC AIIR. Later it was revealed that 150 cfm differential was present with greater exhaust but the pressure was <.001”WC pressure as a result of ceiling leaks. Further test leaks found >22 square inches of leakage in AIIR rooms.



Blower Test #	Test Application	Status	CFM Per Application
1	ToW	Open	7000
2	ToW	Sealed	98.85
3	BoW	Open	98.85
3	BoW	Sealed	40.63
4	Plumbing	Open	816.3
5	Plumbing	Sealed	41.3
6	Low Voltage	Open	191.8
7	Low Voltage	Sealed	45.96
8	Electrical Boxes	Open	135.6
9	Electrical Boxes	Sealed	46.52
10	Mechanical *	Open	135.6
11	Mechanical	Sealed	46.59

It becomes obvious that room performance for safety and cost effective management of the isolation room are important principals that could be problematic if not understood for better control. The performance spec enhances room performance for prevention of disease transmission.

Could it be that if the room is sealed, had appropriate air exchanges that we could negate disease spread via ventilation? A properly functioning room does provide safety to contain disease once identified. This would be 100% reduction in unexpected exposures by inclusion of a well-sealed performance verified airborne infection isolation room.

There is little to no research on the efficacy of a sealed room preventing infections with the use of vaporized chemicals for hospital room disinfection. While efficacious for preventing infections, this may pose a hazard to surrounding beds in hospitals. Here too ventilation efficacy though air balance for an AIIR and assurance that the gas will not seep to other spaces in the occupied hospital condition.

When an infectious disease event occurs what do we want to be assured of regarding the containment rooms? Personal experience during inspection by The Joint Commission (TJC) & Center for Medicare and Medicaid Services (CMS) surveyors and inspectors wanted assurance of functional performance of specific special ventilation (OR's, Protective Environments and Airborne Infection Isolation) rooms.

Of course this means proper air exchanges with enough air extraction to allow for sufficient pressure to contain any infectious particle released by the infected

patient. Or assuring airflow through designated relieve locations (door undercut) to keep infectious particles from susceptible patients.

We have described the rationale for sealing a room. It enhances ventilation efficacy for airborne infectious disease control. This will reduce unexpected airborne disease exposures to personnel not realizing the necessity for functional performance of an airborne infection isolation room. This uncertainty can be mitigated with design to include a sealed room by definition. At a leakage <125 cfm with 0.01"WC and less than 72 square inches equivalent leakage area will provide a specification to assure a consistent safe environment of care.

This concept of a sealed room for the mitigation of airborne spread diseases while safety oriented also provides additional benefits to be defined. 🔥

Andy Streifl, MPH, REHS, is Hospital Environment Specialist, Department of Environmental Health and Safety at the University of Minnesota, Minneapolis, MN.

EDITORS NOTE: Since 1994, some firestop products have been tested for quantified air leakage ("L" Rating) using UL 1479 for Penetrations and UL 2079 for Joints. In Canada, ULC-S-115 incorporates the "L" Rating. These tested and listed assemblies provide quantified air leakage values needed for 'sealing' areas to slow spread of airborne infections. As with all physical properties needed for conditions expected to occur in the building, verify performance with both the building owner and manager's industrial hygienist and also the manufacturer. Check out the article on "L" Ratings in the next issue of Life Safety Digest.

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OSHA Fatality and Injury & Reporting

The Occupational Safety and Health Administration's (OSHA) revised recordkeeping rule, effective January 1, 2015 includes two key changes:

First, the rule updates the list of industries that are exempt from the requirement to routinely keep OSHA injury and illness records, due to relatively low occupational injury and illness rates.

The previous list of industries was based on the old Standard Industrial Classification (SIC) system and injury and illness data from the Bureau of Labor Statistics (BLS) from 1996, 1997, and 1998.

The new list of industries that are exempt from routinely keeping OSHA injury and illness records is based on the North American Industry Classification System (NAICS) and injury and illness data from the Bureau of Labor Statistics (BLS) from 2007, 2008, and 2009. Note: The new rule retains the exemption for any employer with ten or fewer employees, regardless of their industry classification, from the requirement to routinely keep records.

Second, the rule expands the list of severe work-related injuries that all covered employers **must report** to OSHA. The revised rule retains the current requirement to report all work-related fatalities within 8 hours and adds the requirement to report all work-related in-patient hospitalizations, amputations and loss of an eye within 24 hours to OSHA.

Establishments located in States under Federal OSHA jurisdiction must begin to comply with the new requirements on January 1, 2015. Establishments located in states that operate their own safety and health programs (State Plan States) should check with their state plan for the implementation date of the new requirements. OSHA encourages the states to implement the new coverage provisions on 1/1/2015, but some may not be able to meet this tight deadline.

The final rule will allow OSHA to focus its efforts more effectively to prevent fatalities and serious work-related injuries and illnesses. The final rule will also improve access by employers, employees, researchers and the public to information about workplace safety and health and increase their ability to identify and abate serious hazards.

What events are required for employers to report to OSHA?

- All work-related fatalities
- All work-related in-patient hospitalizations of one or more employees
- All work-related amputations
- All work-related losses of an eye

In What Time Frame?

- Work-related fatalities – within 8 hours of finding out about it.
- For any in-patient hospitalization, amputation, or eye loss employers – within 24 hours of learning about it.
- Only fatalities occurring within 30 days of the work-related incident must be reported to OSHA.
- How To Report?
- By Telephone to the nearest OSHA Area Office during normal business hours.
- By Telephone to the 24-hour OSHA hotline (1-800-321-OSHA or 1-800-321-6742).
- By Electronic Reporting – visit www.OSHA.gov for more information

**All employers under OSHA jurisdiction must report these incidents to OSHA, even employers who are exempt from routinely keeping OSHA records due to company size or industry.*

What information is required when reporting a fatality, in-patient hospitalization, amputation, or loss of an eye?

- The establishment name
- The location of the work-related incident
- The time of the work-related incident
- The type of reportable event (i.e., fatality, in-patient hospitalization, amputation, or loss of an eye)
- The number of employees who suffered a fatality, in-patient hospitalization, amputation, or loss of an eye
- The names of the employees who suffered a fatality, in-patient hospitalization, amputation, or loss of an eye
- Your contact person and his or her phone number
- A brief description of the work-related incident.

Further, for an inpatient hospitalization, amputation or loss of an eye, then incidents must be reported to OSHA only if they occur within 24 hours of the work-related incident.

Visit www.OSHA.gov for complete information on the updated requirements or contact the local OSHA office. 🔥



Firestopping is Critical in Hospitals

By Brian T. Murphy

Keeping barriers compliant within healthcare facilities can be very challenging, making proper firestop selection and installation critical. Ensuring that rated fire and smoke barriers are properly maintained or restored to their hourly rating can often be daunting. Furthermore, navigating the complexity of healthcare construction and steering through the demands of perpetually evolving floor, wall, and ceiling penetrations that result from equipment expansions and technology upgrades can make maintaining barrier integrity extremely complex.

In the healthcare physical environment, priorities such as patient privacy and infection control are equally as important as saving lives and protecting assets. Many patients are non-ambulatory and depend on the “defend-in-place” concept of fire protection.

Therefore, fire-rated barriers must be maintained to ensure that the theory of “compartmentation” works. Barriers with improperly firestopped penetrations can put an entire facility at risk during local, state, and federal surveys as well as the safety of patients and staff in the event that a fire breaks out. Because fire-rated walls, floors, and ceilings are frequently compromised by moves, adds and changes to network cabling infrastructure, it should come as no surprise that three of the top six code infractions cited by the Joint Commission are related to rated barriers.

At 2.5 million square feet, Parkland Hospital in Dallas, Texas, has just become the largest public hospital in the nation built entirely in one phase. The \$1.3 billion project will serve more than half a million patients annually. With a campus covering 3 million square feet, the project includes a new 865-bed acute care hospital, outpatient clinics, parking garage, central utility plant and other support facilities.

This new facility will take the citizens of Dallas County well into the 22nd century according to Parkland Fire Marshall, Michael Rader. Rader oversees the life safety code compliance within Parkland to ensure the fire safety of patients, visitors and staff within the building. Ensuring the integrity of the fire barrier systems was a major life safety requirement for the new construction. “Firestopping is the last line of defense for patients within a hospital,” explained Rader. “Should something happen in one area, the firestopping system and smoke-tight seals of your barriers are your last line of defense to protect someone’s mother, brother or sister. You’ve got to think about it in those terms. You don’t just try to do the minimum, or find a system that will work, you want the best.”

The search to find the best system led Rader and the construction management team to Specified Technologies, Inc. (STI), an industry leader in developing innovative fire protection systems. “What made the

choice easy was the reputation of the company, the quality of its products, especially the craftsmanship of their fire rated pathways, and the accountability of their electronic barrier management program as a whole rather than just as a software component,” explained Rader. “It was more of a complete system.” The electronic barrier management program digitally manages the process of creating, sealing, mapping and



The new Parkland Hospital encompasses a 2.8 million square foot campus and includes an 862-bed hospital, outpatient center, parking garage, central utility plant and logistics building. Architect: Hdr + Corgan © : 2014 Assassi Production

subsequent accessing of all penetrations in the facility.

The barrier management software component tracks, houses and manages the data about what exists at the fire resistance rated and smoke resistant barriers. "Tracking is a huge issue and a big responsibility for whoever is doing the work and whoever is doing the inspections," said Rader. From an inspector's vantage point, barrier management software allows random barrier selection and inspection without the cumbersome and costly process of locating a given penetration, fire damper, fire door or fire extinguisher cabinet. "Barcoding labels associated with each penetration allow easy tracking of every pipe and every wire that's going through a wall," explained Rader. "The barcode label is absolute proof that the penetration you intend to inspect is, in fact, the penetration being inspected." The program and the barcoded labels provide pinpoint accuracy to find the exact locations.

Minimizing airborne particulates is critical in the healthcare environment, so the ability to quickly find a penetration, a pipe or a bundle of wires can substantially minimize air contamination. "And, that's huge," says Rader. "Any time you have to remove a ceiling tile in a hospital you encounter dust and stale air. That's something you don't want in a patient area. Being able to quickly find what you are looking for means you disturb as little as possible above the ceiling."

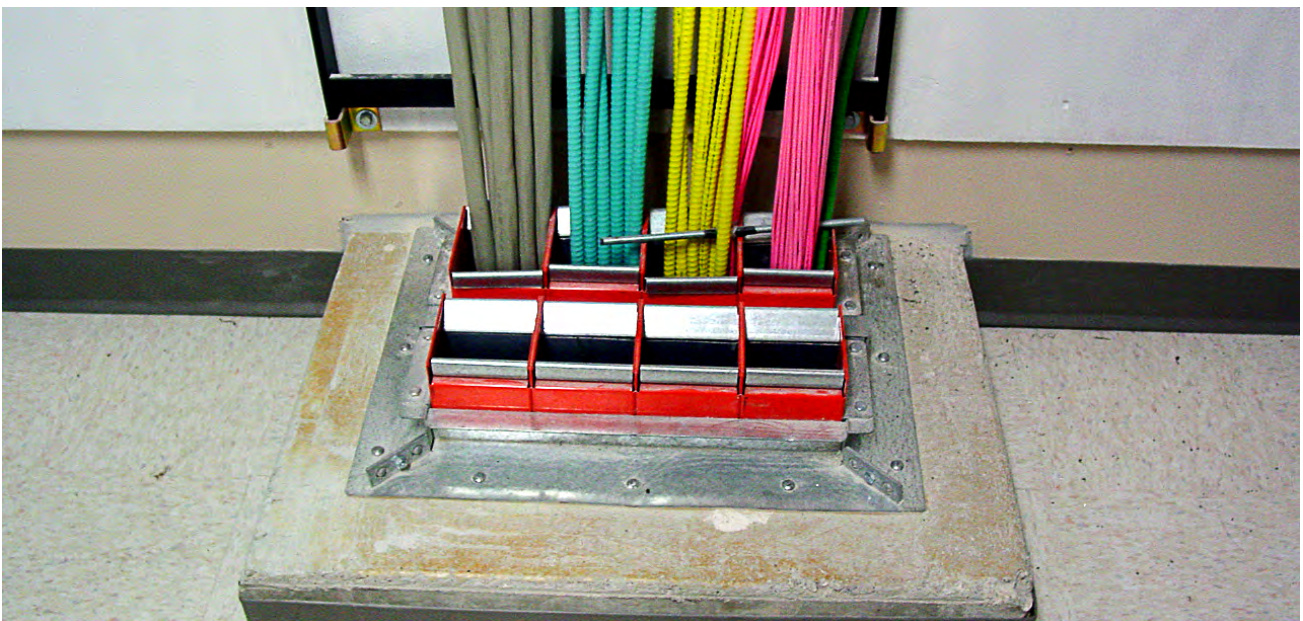
By providing exact locations and open cable pathways, the precision of the barrier management software and the performance of the firestop systems can help to reduce the spread of Hospital Acquired Infections (HAI's). By eliminating scavenger hunts and allowing cable lines to help with frequent moves, adds and changes, the environment of care is disturbed as little as possible, expediting maintenance times, reducing downtime in patient areas, and lowering the potential of empty beds.

"For this project, STI's barrier management software program had no true competition," said Rick Stokes, owner and vice president of Fire Blockers, Inc., the subcontractor in charge of all firestopping and implementation of the barrier management program for the entire Parkland project. "Projects that intend to maintain multiple rated barriers for the long haul must come to terms with the known deficiencies that occur on every project. The barrier management software is the gatekeeper that can drive a facility to maintain these rated barriers at 100% compliance. There is never a need to have a 'Statement of Conditions', which documents deficiencies from a firestop standpoint. The absence of this burden will pay huge dividends for the owner as well as the patient and employee."

In hospital construction, explained Stokes, "trade coordination is absolutely the key to complete firestop. The barrier management software created an environment on the project in which all sub-contractors had to coordinate with Fire Blockers when making penetrations in rated walls. No other provider has any documentation system that even resembles the barrier management software. The benefit to the owner, as well as the construction manager has been absolute compliance throughout the construction process."

STI consistently added value and was there to provide additional support in tandem with Fire Blockers by working with the design team and offering on-site specification and design support and by delivering in-depth training. Engineering Technical Support generated the drawings that included the different barrier types, and the STI rated assemblies provided a quick reference when needed.

John Gardiner, from the integrated construction management team was in charge of all quality control aspects for the massive project. "The use of the iPad in conjunction with the submittal package made for a smooth review process on-site," said John. "The other



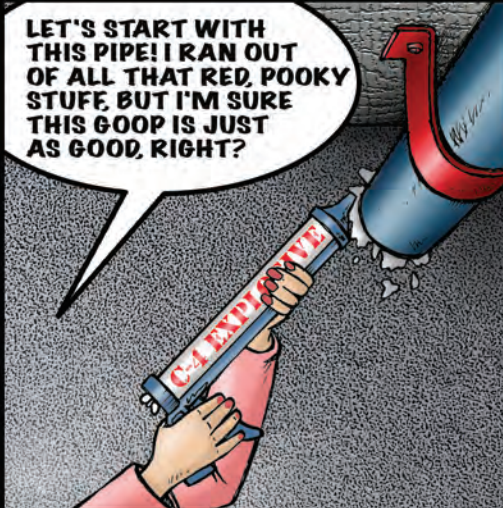
2545 EZ-Path® Series 44 Fire Rated Pathway Module vertical application from floor view above of the EZ-Path series 44 Grid System (Catalog No. EZDG844). STI Photo

THE ADVENTURES OF TM APEX THE FIRESTOPPER

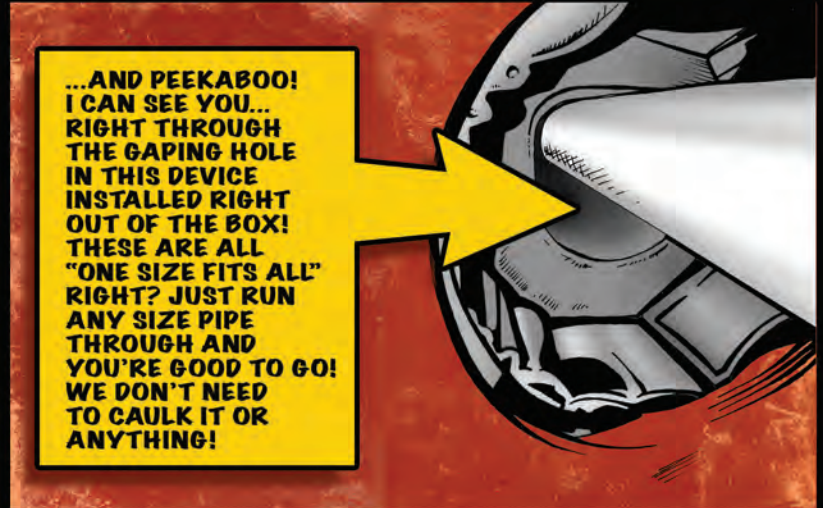
IN THIS ISSUE, WE VISIT
THE SET OF PARIS HILTY'S
NEW GAME SHOW...



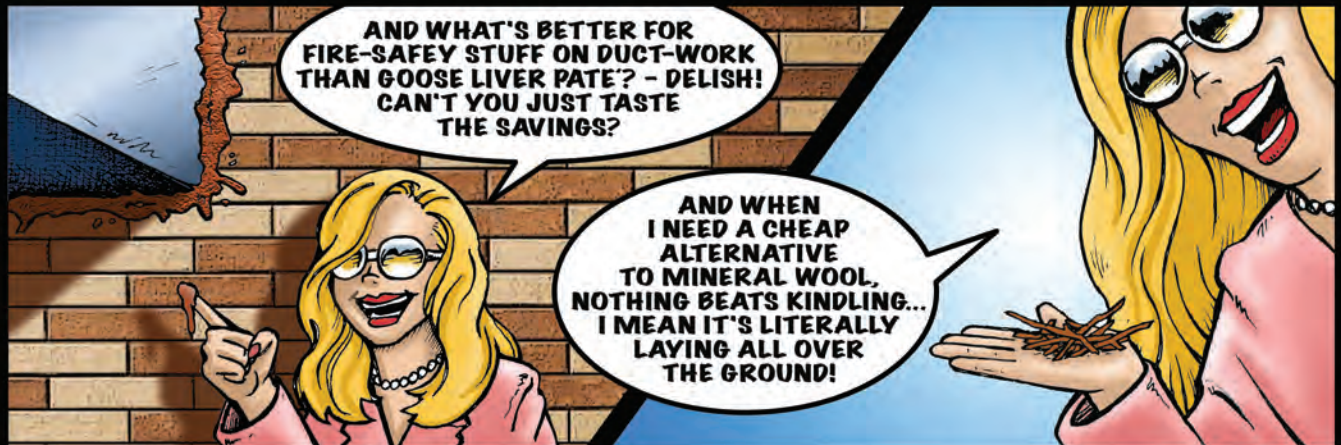
"HI ALL! PARIS HILTY HERE...
AND WELCOME TO MY NEW
SHOW, "I'LL BET YOUR LIFE!"
THE SHOW WHERE I GAMBLE
WITH YOUR LIFE SO I CAN
SAVE A FEW BUCKS!
LET'S PLAY!"



LET'S START WITH
THIS PIPE! I RAN OUT
OF ALL THAT RED, POOKY
STUFF, BUT I'M SURE
THIS GOOP IS JUST
AS GOOD, RIGHT?



...AND PEEKABOO!
I CAN SEE YOU...
RIGHT THROUGH
THE GAPING HOLE
IN THIS DEVICE
INSTALLED RIGHT
OUT OF THE BOX!
THESE ARE ALL
"ONE SIZE FITS ALL"
RIGHT? JUST RUN
ANY SIZE PIPE
THROUGH AND
YOU'RE GOOD TO GO!
WE DON'T NEED
TO CAULK IT OR
ANYTHING!



AND WHAT'S BETTER FOR
FIRE-SAFETY LUFF ON DUCT-WORK
THAN GOOSE LIVER PATE? - DELISH!
CAN'T YOU JUST TASTE
THE SAVINGS?

AND WHEN
I NEED A CHEAP
ALTERNATIVE
TO MINERAL WOOL,
NOTHING BEATS KINDLING...
I MEAN IT'S LITERALLY
LAYING ALL OVER
THE GROUND!



THEN AN
UNEXPECTED
GUEST
ARRIVES!

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benefit was having STI engineering support at our fingertips. If we ran into a barrier issue that did not fit for that specific firestopping UL rating, we were able to rely on STI to get us an engineering judgment that would work for the application."

With a project the magnitude of Parkland, quality, traceability, and dependability are paramount. The number of systems and processes that have to be managed, documented and recorded is "massive" said Rader. "It all comes down to documentation

and tracking, and the reliability of systems that STI provided. You want to eliminate as much vulnerability as you can, and having a device like the open path devices that are self-sealing — that is one vulnerability you can check off your list. If I can check one thing off my list of concerns and the Joint Commission walks in the front door, that's one less thing that's sitting on my shoulders." 🔥

Brian T. Murphy is the Marketing Manager at Specified Technologies, Inc., based in Somerville, NJ. Brian can be reached at bmurphy@stifirestop.com.



Head of wall joint shown above the ceiling grid packed with mineral wool and encapsulated with SpecSeal® AS200 Firestop Spray applied on both sides of wall used to preserve the 2-hour fire rating. STI Photo



Twelve individual EZ-Path® Smoke & Acoustical Pathway Modules (Catalog No. NEZ33) with field fabricated mounting plates penetrating a non-rated partition. STI Photo



Insulated HVAC duct firestopped using SpecSeal® Triple S Sealant (above). Conduit sleeves shown above the ceiling grid penetrating a 1-hour fire-rated barrier firestopped with SpecSeal® SSP Putty with sleeve around the cables and SpecSeal® Triple S Sealant around the sleeve (below). STI Photo

Industry News

FCIA's Firestop ECA Conference – FCIA's Education and Committee Action Conference – ECA 2015 – has officially wrapped up. The historic location, combined with a dynamite line-up of engaging speakers and a great group of attendees made for a productive week. Couldn't attend the Conference, but curious about what you missed? FCIA Members can view Conference Presentations as a Member Benefit in the Members Only section at www.FCIA.org.



FCIA at CSC - At the Construction Specifications Canada (CSC) annual conference, FCIA's Executive Director, Bill McHugh, and Vice-President, Ken Slama, presented to an interested group of Specifiers and Governmental Officials the new FCIA Firestopping 07-84-00 Specification for Canada. The spec was reviewed by FCIA's Canada Committee and was approved by FCIA's Board of Directors just before the show.



While at CSC's Conference, we met with key leaders that handle Canada's National Master Specification (NMS) for Government Buildings, as well as the National Research Council of Canada code development contact. Eric Shudy, a representative of new FCIA Manufacturer Member Fireline 520, was present as well as other FCIA Manufacturer Members 3M Fire Protection, Products and Rectorseal.



FCIA at RAIC's Festival of Architecture – The Royal Architects Institute of Canada's (RAIC) Festival of Architecture is the group's Annual Convention bringing together Architects from across Canada, which took place

in Calgary this year. FCIA was honored to be invited to present at this year's program. We were glad to have the opportunity to discuss the the DIIM method for firestopping, including specifications and tested and listed systems. Also, the benefits of using specialty firestop contractors for new and existing buildings was presented. FCIA Contractors understand Systems, as well as Barrier Management. Managing barriers was discussed heavily during FCIA presentations at both the CSC and RAIC Conventions.



FCIA at ASTM - ASTM's E-06 meetings took place in Anaheim, CA in late April. FCIA leadership met with many manufacturer partners, including HILTI's new Director of Codes and Standards, Ed Goldhammer, as well as Retiring Director John Valiulis, 3M's Mark Lund and Rectorseal's Yanwei Cen. Firestop Consultants Todd Jilbert and

Pat Tesche, along with UL's Luke Woods and others were present in Anaheim too. Discussion during the week centered on product physical properties during installation and curing.

FCIA at ICC Code Development Hearings – FCIA's Code Consultant, Bill Koffel, and FCIA Executive Director, Bill McHugh, plus a host of industry friends, traveled to Memphis to participate at the ICC's Committee Action Hearings (CAH). During the 9 day session, FCIA had several proposals up for consideration.

Check out FCIA's and other proposals in the Code Corner, this issue. Now, the Approved and Disapproved proposals will go through a round of Public Comments before being voted on at the ICC Public Comment Hearings in September. Those that do not receive a public comment become part of the consent agenda meaning committee action will be the final decision.

FCIA & Barrier Management Symposiums - FCIA partnered with The Joint Commission, The American Society for Healthcare Engineering (ASHE) and UL to deliver a 'Barrier Management Symposium' in Rochester, MN to ASHE's Region 9. FCIA leaders, including Mark Dietz - Treasurer, Gary Hamilton - President and Don Murphy - Marketing Chair, along with FCIA Accreditation Committee Member, Ben Urcavich, all attended, supporting the program. FCIA's Executive Director, Bill McHugh, moderates the two-day session. The next session will be at ASHE Region 5 in Indianapolis July 27 and 28*. Check out the Barrier Management Page at www.fcia.org for details and registration information. Questions? Email info@fcia.org for info. *There is a registration fee for this event.



FCIA at Building Officials Association of British Columbia

- While at the International Accreditation Services (IAS) Board of Directors Meeting in Vancouver, we were invited to attend the BOABC's Annual Awards Banquet and were able to tour the fire test lab at QAI Laboratories. QAI has

fire test facilities to perform ASTM E 814/UL 1479 testing for penetrations, UL 10 for doors and more.

We also had the opportunity to thank fellow IAS Board Members Selso Mata, Plano Building Code Official, for organizing a great code official panel who told us 'what it's like in their shoes' and John Barrios, Tampa Building Code Official, for his presentation at FCIA's 2012 FIC in Orlando. And, after listening to ICC's Chief Financial Officer, FCIA is glad to report that both ICC and IAS are healthy financially.

New Firestop Council Director - At FCIA's Education and Committee Action Conference, Charbel Tagher, STI, announced that John Valiulis, recently retired from HILTI, has accepted the opportunity to manage the International Firestop Council effective June 1. John has been involved with codes and standards for over 15 years with HILTI.

DHI CEO Named head of Small Business

Legislative Council - Jerry Heppes, Sr., CAE, Chief Executive Officer of the Door and Hardware Institute (DHI), has assumed the position as Chair of the Small Business Legislative Council (SBLC). The Chair of the SBLC is an annually elected position.

Earlier this year, the SBLC announced that the Council's top priorities for 2015 will be tax reform, health care, regulatory relief and improving the nation's infrastructure. "We will vigorously oppose tax reforms that place an unequal burden on small and closely held businesses," said Mr. Heppes at the SBLC's Annual Meeting. "We will work to ensure that Congress keeps small business as a priority when passing laws and establishing regulations. Small businesses cannot continue to absorb the brunt of tax burdens and must be a priority for our legislators on the Hill."

New Door Publication - Scott Tobias's new book, *Illustrated Guide to Door Hardware: Design, Specification*, arrived at FCIA's offices last week. Tobias, Assa-Abloy's Vice President of Architectural Development, Door Security Solutions, has been active in the door industry through DHI, CSI and other key associations. The book covers topics from doors to hardware and beyond. Check it out at <http://www.wiley.com/WileyCDA/WileyTitle/productCd-111811261X.html>.



NFPA Expo

- The National Fire Protection Association (NFPA), the authority on fire, electrical and life safety, hosts its annual conference and exposition June 22-25, 2015 at McCormick Place in Chicago. More than 300 exhibitors from around the US and around the world will display crucial products for a wide

variety of professionals. In addition, 134 conference sessions will inform and enhance the attendees' understanding of NFPA codes and standards.

As examples, those attending "The Drones are Coming: Incorporating Unmanned Aircraft Systems into the Fire Service of the Future" will learn that a few North American Fire Departments are testing drones, with possible future uses of giving commanders an aerial view of fires or close-up inspection of confined spaces or collapsed buildings, to guide decision-making.

In the Conference's featured presentation, "The Lac-Mégantic Railway Disaster – A Town Destroyed and 47 Killed: Lessons Learned," two Canadian Fire Chiefs discuss the derailment of a 72-car train in rural Quebec and resulting fatalities, and how the tragic incident provided valuable lessons for first responders and local officials.

In the keynote address, three speakers present the hypothetical situations of a tornado devastating a town.

In addition to emergency preparedness, other conference tracks are codes and standards, detection and notification, fire suppression, public education, electrical, fire protection engineering, fire and emergency services, building and life safety, loss control / prevention and health care.

FCIA's Don Murphy, other FCIA Board Members, and FCIA Staff will be on-site representing FCIA with a booth and Publication Bins on the Expo floor.

Barrier Management & ASHE's Annual

Convention - The Barrier Management Symposiums have been a great success, as measured by The Joint Commission. ASHE's Jonathan Flannery, TJC's Anne Guglielmo and FCIA's Bill McHugh present the Barrier Management Segment from the Symposium Tuesday afternoon July 14 at ASHE's Annual Convention.

ROXUL's Fire Seminars - FCIA Manufacturer Member, Roxul, is planning four Fire Seminars that focus on fire resistance and energy efficiency at the same time. Energy codes are demanding more and more 'R's for walls, floors and roofs. Learn about critical elements for both needs and energy efficiency, as well as fire safety during these sessions. Visit www.ROXUL.com for registration info.

Buildings & Energy Storage - As power plants are decommissioned, utilities are looking for ways to meet peak demand for power.

Tesla's Elon Musk recently announced a very efficient new battery storage device that may help building owners store power generated from supply plants or their own generation devices, such as solar panels or wind turbines.

The question is how do we protect against fire spread from these banks of batteries? The Portland Cement Association, NFPA and others are researching this question to come up with solutions. Fire-resistance rated construction is a possible solution. Positioning batteries outside of buildings in vaults may also solve the problem; however, where the power cables enter the building will need firestopping installed to keep fires from spreading into the building from an outside source.



PROJECT FAIL-SAFE

NASFM Project Fail-Safe - Louisiana State Fire Marshal and President of The National Association of State Fire Marshals (NASFM), Butch Browning, stated recently:

"THE IMPACT ON FIRE SAFETY AND BUILDING RESILIENCY AS A RESULT OF THIS PROJECT CANNOT BE UNDERSTATED...IT HAS THE POTENTIAL TO ALTER BUILDINGS, AND INFORM THE CODES THAT GOVERN THEM, FOR DECADES TO COME."

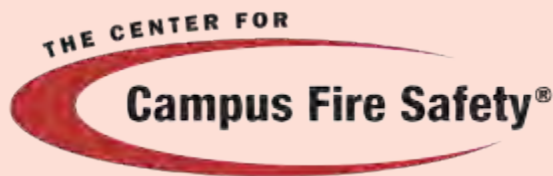
Through a series of full-scale fire performance tests, Project FAIL-SAFE will provide valid, scientifically defensible answers to either prove or disprove the value of safety layering in building resiliency. The data generated on the relative value of multiple layers of safety in structures will finally be available to serve as a baseline for future decisions.

For info, visit www.FIREMARSHALS.org.



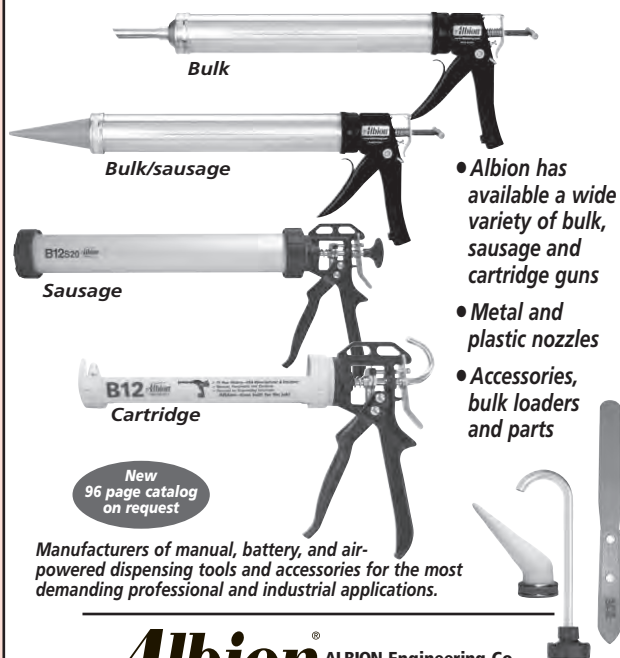
Building Safety Month – This May was Building Safety Month (BSM), founded by the ICC. BSM is a worldwide public awareness campaign to help individuals, families

and businesses understand what it takes to create safe and sustainable structures. This year's theme, Resilient Communities Start with Building Codes, reinforced the need for adoption of modern, model building codes, a strong and efficient system of code enforcement and a well-trained, professional workforce to maintain the system. The weekly themes of the campaign were: Don't Get Burned; Bounce Back Faster from Disaster; Water Safe, Water Smart; and \$ave Energy. Our hats are off to ICC for another successful Month where building safety is promoted widely.



The Center for Campus Fire Safety Offers Webinars – The Center for Campus Fire Safety has been presenting webinars to Members and the public to increase awareness of key campus issues with the intent of reducing the loss of life from fire on college campuses worldwide. The group worked with FCIA leadership to offer two programs presented by FCIA Executive Director, Bill McHugh. The first of these programs was held in late-April and received high-praise from attendees. The second of these programs will be conducted mid-June. 🔥

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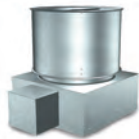
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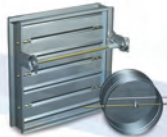
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Code Corner

ICC Cycle A Code Development Hearings - The International Code Council (ICC) had its Committee Action Hearings April 19 - May 2 in Memphis, TN, USA.

During this cycle and at the hearings, the ICC unveiled its new Code Development Process, called **cdpAccess**. This new collaborative development tool was used for code proposal submissions, as well as floor modifications, during the hearings. It also serves as the platform for the remote online voting that takes place on floor motions.



FCIA's Bill McHugh served on the Fire Safety Committee, which heard the FS Proposals. Many from the fire resistance industry were in attendance to testify for or against proposals.

Want to learn more about the ICC's CDP Access Process, visit www.iccsafe.org, code development. Below are discussions about code proposals.

In proposal FS 1, the issue being discussed was using sprinklers to wet any assembly to make it hourly fire resistance rated. FS 2 dealt with the relationship between alarms and detection and the passive fire protection components activated by these systems. Both proposals, FS 1 & FS 2 were DISAPPROVED by the committee. FS 1 was moved for Assembly Action, which then sent the proposal for 'online voting', and a delay until May 29. The online voting, through the CDP Access process, produced opposition to the proposal of 74%, with supporters only 26%. The Committee Disapproval stood.

FCIA's position on the proposals is that Fire Resistance must be primary for the building element. The means to achieve fire resistance is with a fire test without an 'assist' from sprinklers. In FCIA's opinion, the statement needed to stay in the code that sprinklers are not to be used to establish a fire rating. FS 1 was a modification to the 703.4, while FS 2 was to delete the section altogether. The FS 2 proposal's intent was to coordinate the interaction between passive and active systems including fire alarms.

FS 1 – DISAPPROVED - Proponent: Jeffrey Shapiro, Tyco Fire Protection Products, representing Tyco Fire Protection Products.

703.4 Automatic sprinklers. Under the prescriptive fire-resistance requirements of this code, the fire-resistance rating of a building element, component or assembly shall be established without the use of automatic sprinklers or any other fire suppression

system being incorporated as part of the assembly tested in accordance with the fire exposure, procedures and acceptance criteria specified in ASTM E 119 or UL 263. However, this section shall not prohibit or limit the duties and powers of the building official allowed by Sections 104.10 and 104.11.

703.4 Automatic Sprinklers Assemblies utilizing fire sprinklers as an alternative to complying with a required fire resistance rating for a building element, component or assembly shall only be permitted where approved by the Building Official in accordance with Sections 104.10 and 104.11.

FS 2 – DISAPPROVED - Proponent: Daniel Nichols, New York State Division of Building Standards and Codes, representing New York State Division of Building Standards and Codes (dnichols@dos.state.ny.us)

Delete without substitution:

703.4 Automatic sprinklers. Under the prescriptive fire-resistance requirements of this code, the fire-resistance rating of a building element, component or assembly shall be established without the use of automatic sprinklers or any other fire suppression system being incorporated as part of the assembly tested in accordance with the fire exposure, procedures and acceptance criteria specified in ASTM E 119 or UL 263. However, this section shall not prohibit or limit the duties and powers of the building official allowed by Sections 104.10 and 104.11.

In FS 5-15, FCIA's proposal to require markings of penetration and joint firestops was DISAPPROVED by the committee.

FS 5-15, Proponent: William Koffel, representing Firestop Contractors International Association.

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

Do Not Disturb - Firestop System or Fire-Resistant Joint System as appropriate

System Design Number:

Engineering Judgement Number:

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

FCIA testified on this proposal and had good support from the audience. For the building owner and

manager who has to live with the structure after construction, there is no way to know what product exists in a structure without the system or EJ number. The System number refers to a tested and listed system design in a directory. That system description includes the manufacturer name, products used, from which installation and repair instructions are found.

As such, this proposal speaks to those who inspect, survey and are maintaining the structure for its complete life cycle with the objective that any changes will use a 'Firestop System'. With an identification system, building management will know what material was used and the system number provided at the wall or floor location provides the roadmap to the recipe for repairs and verification. Many FCIA Member Firestop Contractors, and or FM 4991 Approved or UL/ULC Qualified Contractors do this already and do it well. A major northeast university facility engineer testified that this is done in his building and successfully, supporting the change. Although positive, the proposal was disapproved.

In **FS6**, there was a proposal that was **DISAPPROVED** that would have allowed a combination of dissimilar materials including gypsum, concrete, concrete block or SFRM/IFRM's to encase columns used for the primary structural frame. This would mean that a wall could encase the column on one side, and IFRM or SFRM fireproofing on the other sides.

The committee felt that the proposed language was confusing in that it was not clear as to whether the fire resistance rating required for the primary structural frame member or the assembly on the unexposed side was used to determine the extent of protection to be provided. Providing clarity for application of these provisions is critical as it pertains to the primary structural frame. Further, concerns were raised on how the intersection between the primary structural frame assembly and the assembly on the unexposed side would be treated.

FS 6-15, Part I

2015 International Building Code

Revise as follows:

704.2 Column protection. Where columns are required to have protection to achieve a fire-resistance rating, the entire column shall be provided individual encasement protection by protecting it on all sides for the full column height, including connections to other structural members, with materials having the required fire-resistance rating. Where the column extends through a ceiling, the encasement protection shall be continuous from the top of the foundation or floor/ceiling assembly below through the ceiling space to the top of the column.

Exception: Individual encasement protection is not required on unexposed sides provided the extent of protection on unexposed sides is in accordance with the required fire-resistance rating, as determined in Section 703.

FS 6-15, Part II

2015 International Building Code

Revise as follows:

704.3 Protection of the primary structural frame other than columns. Members of the primary structural frame other than columns that are required to have protection to achieve a fire-resistance rating and support more than two floors or one floor and roof, or support a load-bearing wall or a non-load-bearing wall more than two stories high, shall be provided individual encasement protection by protecting them on all sides for the full length, including connections to other structural members, with materials having the required fire-resistance rating.

Exception: Individual encasement protection on all sides shall be permitted is not required on all exposed unexposed sides provided the extent of protection on unexposed sides is in accordance with the required fire-resistance rating, as determined in Section 703.

FS 20-15, submitted by the International Firestop Council (IFC) was **APPROVED**. In this proposal, IFC was aiming at having Perimeter Fire Containment protect against fire lapping outside and back into the building at the curtainwall and window assembly above the fire resistance rated horizontal assembly.

Proponent: Tony Crimi, representing International Firestop Council (tcrimi@sympatico.ca)

705.8.5 Vertical separation of openings. Openings in exterior walls in adjacent stories shall be separated vertically to protect against fire spread on the exterior of the buildings where the openings are within 5 feet (1524 mm) of each other horizontally and the opening in the lower story is not a protected opening with a fire protection rating of not less than 3/4 hour. Such openings shall be separated vertically not less than 3 feet (914 mm) by spandrel girders, exterior walls or other similar assemblies that have a fire-resistance rating of not less than 1 hour, rated for exposure to fire from both sides, or by flame barriers that extend horizontally not less than 30 inches (762 mm) beyond the exterior wall. Flame barriers shall have a fire resistance rating of not less than 1 hour. The unexposed surface temperature limitations specified in ASTM E 119 or UL 263 shall not apply to the flame barriers or vertical separation unless otherwise required by the provisions of this code.

Exceptions:

1. This section shall not apply to buildings that are three stories or less above grade plane.
2. This section shall not apply to buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.
3. Open parking garages.

On this proposal, FCIA was able to present testimony from the committee to help get 'leapfrog'

type requirements in the code for perimeter fire containment. If this passes through the public comment hearings, this will mean that some kind of treatment will be required at the perimeter for a height to prevent fire from leaping outside windows and up the outside face of the building, burning out the glass above and jumping floors. Testimony focused on the fact that “at the Standards Development Organizations, this standard has been discussed for at least 15 years, with no conclusion. It’s time to put the requirement into the code so the message is sent to the standards development community to finish this life safety standard.”

In FS 34 – The International Firestop Council tried to add the new ASTM E 2837 head of wall joint test standard where the rated wall assembly meets a non-fire resistance rated roof to the code. While FCIA tried to help, the proposal was **DISAPPROVED**. It seemed that the only testimony against was from building owners and manufacturers. There were three parts and all of them were **DISAPPROVED**. Below is an example of one part of the proposal.

FS 34-15, Part I - 2015 International Building Code

706.10 Joints. Joints made in or between fire walls shall comply with Section 715.

Add new text as follows:

706.10.1 Joints at floors. Where a fire wall is permitted to terminate at the underside of the roof sheathing, deck or slab in accordance with 706.6, joints

at the intersection of a fire wall and the underside of a fire-resistance-rated roof assembly, slab or deck above shall comply with Section 715.

706.10.2 Joints at non-fire-resistance rated roof intersections in lieu of parapets. Where vertical continuity in accordance with section 706.6 is not provided by a parapet, joints at the intersection of a fire wall and a nonfire-resistance-rated roof assembly, roof slab, or roof deck shall be protected by an approved continuity head of wall joint system installed as tested in accordance with ASTM E2837. The system shall have an F rating/T rating of not less than that of the firewall.

Add new standard(s) as follows:

Add new Referenced Standard to Chapter 35 as follows:

ASTM E2837, Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed between Rated Wall Assemblies and Nonrated Horizontal Assemblies.

In FS 44-15, the International Code Council’s (ICC) AdHoc Committee on Healthcare proposed that on doors not required to have a fire rating in smoke barriers, factory applied or field applied protective plates are not required to be labeled. FCIA supported this as it is not affecting safety and it was **APPROVED**.

FS 54-15 was **DISAPPROVED**. Proponent William Koffel, representing Firestop Contractors International Association, tried to add the FM 4991 Approved or UL

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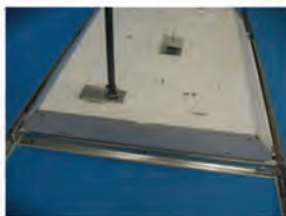
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Qualified Firestop Contractor Programs to the code for I-2 Occupancies, basically healthcare facilities. FCIA was not successful. We had support from a major northeast university who stated, "We use these contractors and they are good". The Committee stated a reason that special inspection is in the code and that this should be used instead. Additional comments were that the state and local levels are used to build qualifications for contractors.

714.2 Contractor Qualifications In buildings of Group I-2 occupancy, listed through-penetration firestop systems shall be installed by contractors certified by an organization accredited to the criteria set forth ISO 17065 by a recognized accreditation body complying to ISO 17011. Documentation shall be submitted to the code official verifying certification of the contractor.

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

Add new standard(s) as follows:

ISO 17011-15 - Conformity assessment — General requirements for accreditation bodies accrediting conformity assessment bodies

ISO 17065-15 - Conformity assessment — Requirements for bodies certifying products, processes and services

FS 55-15 was APPROVED. The proponent, William Koffel, representing Firestop Contractors International Association proposed:

Add new text as follows:

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

This proposal clearly designated that firestop systems are required by code to be installed to the tested and listed system AND the manufacturers installation instructions. In this life safety industry, systems are the critical components for getting firestop systems done right the first time. While simple, it sends a huge message to both the designer who is to communicate this through the construction documents to the contractor that the manufacturers installation instructions AND tested systems are needed.

In **FS 56-15**, UL's Proposal to add SYSTEMS to another section of Chapter 7 was **APPROVED AS MODIFIED**. In this proposal, the committee helped add the word systems to the proposal, focusing on firestop systems. It originally had stated 'materials' in the underlined (new) text. FCIA and UL both were able to support this proposal.

Proponent: Jonathan Roberts, UL LLC, representing UL LLC (jonathan.roberts@ul.com)

Revise as follows:

714.3.1.1 Fire-resistance-rated assemblies. Penetrations

Through penetrations shall be protected using systems

installed as tested in an the approved fire-resistance-rated assembly.

714.4.1.1 Installation **Fire-resistance-rated assemblies.** Through penetrations shall be protected using systems installed as tested in the approved fire-resistance-rated assembly.

FS 58-15, submitted by the International Firestop Council, was **DISAPPROVED**. In 714.3.2, the proposal tried to change language from 'non-communicating' to non-staggered studs. The committee felt that metal studs would still communicate fire between wall cavities due to holes in the studs, and therefore did not allow the change.

Proponent: Tony Crimi, representing International Firestop Council (tcrimi@sympatico.ca)

2015 International Building Code

Revise as follows:

714.3.2 Membrane penetrations. Membrane penetrations shall comply with Section 714.3.1. Where walls or partitions are required to have a fire-resistance rating, recessed fixtures shall be installed such that the required fire resistance will not be reduced.

Exceptions:

1. Membrane penetrations of maximum 2-hour fire-resistance-rated walls and partitions by steel electrical boxes that do not exceed 16 square inches (0.0103 m²) in area, provided the aggregate area of the openings through the membrane does not exceed 100 square inches (0.0645 m²) in any 100 square feet (9.29 m²) of wall area. The annular space between the wall membrane and the box shall not exceed 1/8 inch (3.2 mm). Such boxes on opposite sides of the wood or steel stud wall or partition shall be separated by one of the following:

1.1. By a horizontal distance of not less than 24 inches (610 mm) where the wall or partition is constructed with individual ~~noncommunicating~~ non-staggered stud cavities;

1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose-fill, rockwool or slag mineral wool insulation;

1.3. By solid fireblocking in accordance with Section 718.2.1;

1.4. By protecting both outlet boxes with listed putty pads; or

1.5. By other listed materials and methods

There were several proposals that tried to address inconsistencies in the code for the need for T Ratings. In **FS 60-15**, FCIA'S proposal to alter the exceptions to eliminate T Ratings in the concealed space of a horizontal assembly or within the cavity of a wall above or below the floor was **DISAPPROVED**. **The International Firestop Council's FS 61, similar to FS 60**, also was **DISAPPROVED**. Then, in **FS 65**, Hilti tried to give firestop products the same exception that exists for concrete and grout materials around metal pipe penetrations. This also was **DISAPPROVED**.

As a firestop industry, we know that there is a fire risk due to heat transfer and penetrating items. Therefore, the T Rating is critical to preventing fire spread without flame ever poking through the assembly. Based on physics and safety, we did not support this proposal because we believe the exception that allow concrete and grout products used as a fire resistance rated assembly around metal piping to not need a T rating is incorrect and should not be allowed. FCIA's position on this is that T ratings are needed regardless of the material used around the penetrating item to extend the fire resistance rating of the floor through the penetration. The physics of heat transfer of penetrating items does not change if the firestop material changes.

In **FS 69**, the intersection of exterior curtain wall assemblies and the roof slab or deck was proposed to not be firestopped. This proposal was **APPROVED**. The International Firestop Council believed this not to be a great risk area and it a very difficult application.

FCIA's proposal, **FS 70-15** was **APPROVED**, addressing the same concept as in penetrations, but this time with joints.

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

FCIA's thoughts with this modification to the code is that the material manufacturers must state how to install the products for fire resistance ratings that will accommodate expected building movements. This removes interpretations about how to install products. It is very clear that the manufacturers installation instructions and the tested and listed system dictate how firestopping is to be installed and that this must be communicated through the construction documents to the contractor.

In **FS 86-15**, the Builders Hardware Manufacturers Association attempted to add smoke resistance to all fire resistance rated doors in corridors, smoke barriers and fire barriers. It was **DISAPPROVED** due to the reach of smoke resistance into fire barriers and that the option for this already exists to build above code.

In, **FS 99-15** the ICC's Fire Code Action Committee tried to harmonize how building code officials inspect fire protection rated glazing in the field with the code language. The official views the listing label on the frames that shows fire resistance that complies with code. It was **APPROVED AS SUBMITTED**.

In **FS 101**, the Fire Resistance Rated Glazing Industry, Doors and Fire Code Action Committee (FCAC) worked together to reorganize Section 716 so it flows logically. New titles and charging statements also help make the code read easier according to the FCAC. The Fire Safety Committee **APPROVED** the proposal.

Proposal **FS 102-15**, attempted to introduce a 'Fire Curtain' as a fire resistance rated horizontal assembly equal to a concrete. This proposal was **DISAPPROVED** 14-0 by the committee because if the assembly is to comply the same as concrete or another horizontal assembly, it must pass the hose stream test.

The fire curtains have not passed the hose stream test during ASTM E 119 fire testing. Comments from the code hearing participants included that the curtains may not stand up to the head of water released when sprinklers activate causing a breach in the assembly during fire exposure. Other comments included that the curtains have no temperature ratings, may be affected by air movements and may not have the appropriate testing showing it's use as a horizontal fire resistance rated assembly.

In **FS 104-15**, submitted by the International Firestop Council, the change employed the defined terminology "fire damper" instead of the term "damper" in the passage. 'Dampers can include "Ceiling radiation dampers," "Combination fire/smoke dampers," "Corridor dampers," "Fire dampers" and "Smoke dampers"'. The exception to the provisions for firestopping should not be applied when only smoke dampers, ceiling radiation dampers and corridor dampers are required to be installed. This is due to the fact that smoke dampers usually are not installed at the plane of the smoke resistant assembly. This was **APPROVED AS SUBMITTED**.

In **FS 105-15**, the International Firestop Council tried to add a requirement for fire resistance wrap around ductwork tested and listed as a system to ASTM E 2816-11. ASTM E 2816 is the standard for fire protecting air ducts that supply uncontaminated air to the outlet and inlet terminal. The Fire Safety Committee **DISAPPROVED** the proposal. Reasons included that the test method is a conglomeration of tests, that the duct may not need to stay intact to pass and transitions are not part of the test standard. Similar proposals in **FS 109-15** and **FS 145-15**, both were **DISAPPROVED** as well.

In **FS 131**, a move was proposed to delete Section 722, Calculated Fire Resistance from the International Building Code. This was **DISAPPROVED** by the committee. It was felt that this section is used by designers and others frequently.

There were several proposals that dealt with the exterior vertical and lateral flame propagation issues and NFPA 285 testing. The successful proposal **APPROVED** was **FS 146-15**.

FS 146-15

1403.5 Vertical and lateral flame propagation.

Exterior walls on buildings of Type I, II, III or IV construction that are greater than 40 feet (12 192 mm) in height above grade plane and contain a combustible water-resistive barrier ~~in accordance with Section 1404.2~~ shall be tested in accordance with and comply with the acceptance criteria of NFPA 285. For the purposes of this section, fenestration products flashing of fenestration products and water resistive barrier flashing and accessories at other locations, including

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

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

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through-wall flashings, shall not be considered part of the water-resistive barrier.

Exceptions:

1. Walls in which the water-resistive barrier is the only combustible component and the exterior wall has a wall covering of brick, concrete, stone, terra cotta, stucco or steel with minimum thicknesses in accordance with Table 1405.2.

2. Walls in which the water-resistive barrier is the only combustible component and the water-resistive barrier has a peak heat release rate of less than 150 kW/m², a total heat release of less than 20 MJ/m² and an effective heat of combustion of less than 18 MJ/kg as determined in accordance with ASTM E 1354 and has a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E 84 or UL 723. The ASTM E 1354 test shall be conducted on specimens at the thickness intended for use, in the horizontal orientation and at an incident radiant heat flux of 50 kW/m².

“The Committee acknowledged that this proposal clarifies the intent of Section 1403.5 in that the trigger for requiring NFPA 285 testing is the water-resistive barrier material and not its accessories. It extends to the excepted accessories specifically mentioned to include flashings that are not associated with fenestration. The modification further clarifies that all water-resistive barriers need to be included in this

requirement.”

In **E-112**, FCIA proposed that penetrations be allowed in stairway enclosures for security systems. The Committee agreed and **APPROVED** the proposal. “This allowance for security systems to penetrate a stairway enclosure is appropriate. Security systems are needed for occupant safety. These systems can also be used for remote assessment of a stairway during an emergency. This is coordinated with NFPA 101.”

In **S-10**, **Tony Apfelbeck, City of Altomonte Springs, FL**, proposed that buildings without sprinkler systems have special inspection of firestopping:

[BF] 1705.17 Fire-resistant penetrations and joints. In high-rise buildings, buildings greater than 2 stories that are not protected by an automatic sprinkler system or in buildings assigned to Risk Category III or IV, special inspections for through-penetrations, membrane penetration firestops, fire-resistant joint systems and perimeter fire barrier systems that are tested and listed in accordance with Sections 714.3.1.2, 714.4.2, 715.3 and 715.4 shall be in accordance with Section 1705.17.1 or 1705.17.2.

The committee **DISAPPROVED** this proposal based on no data submitted to substantiate the need to these inspections and that the inspection would result in unnecessary cost increase for relatively small buildings. It seemed the consensus of the audience was that on smaller projects, these are evaluated by the code official. Also, code officials can require special

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inspection if they need to using Chapter 1 of the code.


In **G 128**, the Portland Cement Association attempted to add a section 427 on High Risk Areas where hurricane's and seismic activity, plus height and area, causes events that can destroy buildings, to get stronger regulations. **The proposal was DISAPPROVED.**

"The Committee acknowledged that the issue of building resilience should be addressed, but it needs a more comprehensive, global discussion by a broad range of our constituents." It was also stated that "The codes have improved over the years. Buildings built under current codes are already more resilient compared to historic codes. The structural provisions for resisting earthquake, flooding and high wind have been enhanced numerous times."

It was also noted that "The building code can't control infrastructure." There were also local decision/control issues, and the possibility that incentives to install sprinklers might be removed.

In **G 154-15**, "Stationary storage battery systems in accordance with Section 609 of the International Fire Code and having a liquid electrolyte capacity of more than 50 gallons for flooded lead-acid, nickel-cadmium or VRLA, or more than 1,000 pounds for lithium-ion and lithium-metal polymer used for facility standby power, emergency power or uninterruptable power supplies", was altered.

The reason this was **APPROVED** was to link the International Building Code with appropriate language in the Fire Code for these battery storage facilities.

NFPA Code Development Cycle Starts - The NFPA Code Development Process is an ongoing program. Chapters are on a three year cycle and rotate years. The NFPA Fire Protection Features Cycle starts with code development proposals due July 1. A NFPA FPF Meeting takes place in Milwaukee July 30. Look for FCIA to submit several proposals for this cycle. 

Life Safety Digest

2015 Industry Calendar

June 22-25, 2015

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

July 12-15

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

July 27-28

Barrier Management Symposium
Indianapolis, IN
<http://www.isheweb.org/barrier-management-symposium/>

Sept. 6-7

Middle East Health & Safety Forum
Dubai, UAE
www.hse-forum.com

Sept. 8-10

FCIA Canada Firestop Symposium
Ottawa, ON
www.fcia.org

Sept. 14-16

Middle East FireSafe
Dubai, UAE
www.hse.fleminggulf.com/middle-east-firesafe-conference

Sept. 14-16

Oman Fire Safety & Security
Exhibition (OFSEC)
Muscat, Oman
www.muscat-expo.com/ofsec/

Sept. 20-22

CHESS SCISS National Conference
Edmonton, AB
www.ches.org

Sept. 27-29

ICC Expo
Long Beach, CA
www.iccsafe.org

Sept. 30-Oct. 3

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

Oct. 7-9

IFMA World Workplace
Denver, CO
www.worldworkplace.ifma.org/

Oct. 13-22

FCIA's Middle East Symposiums
Abu Dhabi, UAE and Doha, Qatar
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Nov. 3-6

FCIA Firestop Industry Conference &
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A large graphic on the right side of the poster. It features a dark blue silhouette of the St. Louis skyline, including the Gateway Arch and several skyscrapers. The skyline is set against a white background and is partially enclosed by the lower curve of the Gateway Arch. Below the skyline, the text 'ST. LOUIS' is written in large, white, bold, sans-serif capital letters. Underneath that, the dates 'SEPTEMBER 29-OCTOBER 3' and the location 'AMERICA'S CENTER | ST. LOUIS, MO' are written in smaller, white, sans-serif capital letters. The entire graphic is set against a dark blue background that also contains a large gear icon on the left side.

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