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## Life Safety

#### On the Cover:

Healthcare occupancies need to protect people when they are most vulnerable, young, sick, old, recovering.

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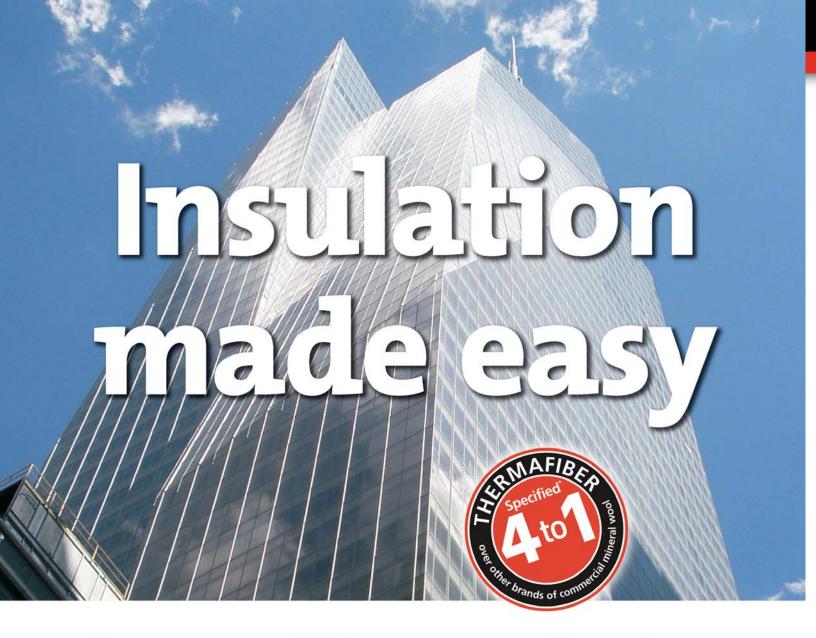
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\*Reed Construction Data, June 27, 2008

### Editor's Message

Healthcare facilities need to create a healing environment where people recover from sickness, bring new life into the world, or have surgery...and much more. Horizontal fire barriers and smoke resistant systems are critically important issues in healthcare occupancies. Firestopping, fire-resistance-rated doors and hardware, fire dampers, as part of the fire and smoke barriers, can make the difference if managed well.

In this Healthcare Issue of Life Safety Digest, read a summary report of Doug Erickson's presentation at the FCIA Education and Committee Action Conference about the Healthcare Environment. He brings the facility manager's world into focus which

assists us in serving our customers. Renee Jacobs, a facility engineering consultant writes about barrier management programs. FCIA member STI contributed an article with a great teamwork approach to barrier management programs. And, the industry news is chock full of good information about the effective compartmentation industry.

Appropriate security, life and fire safety are huge parts of creating an environment conducive to healing. Each has a role in this important environment.

FCIA believes that all types of fire protection - alarms and detection, fireand smoke-resistance-rated horizontal and wall assemblies and suppression systems, plus occupant education - are needed to keep us safe, wherever we are, when an emergency event strikes.

Join FCIA and other associations that support fire-resistance-rated and smoke-resistant compartmentation that brings safer buildings for all.

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## Construction Barrier Management Program Ensures Fire Barrier Integrity at UAMS New Hospital Expansion

The new 10-level, 540,000-sq-ft expansion to the University of Arkansas for Medical Sciences (UAMS) hospital incorporates the latest medical technology, larger all-private patient rooms and private rooms for infants in the neonatal intensive care unit (NICU). The nearly \$200 million, 437-bed building includes design elements that focus on creating a pleasant environment that promotes healing and provides ample space for family members to support loved ones during a hospital stay. UAMS is the state's only comprehensive academic health center, with five colleges, a graduate school, a medical center, six centers of excellence and a statewide network of regional centers.

In 2005, the University of Arkansas for Medical Sciences (UAMS) decided to undertake a series of expansion and renovation projects to improve its clinical, research and education services essential for maintaining UAMS' solid reputation for comprehensive care. The largest project was a significant expansion of the UAMS Medical Center building. The 50-year-old structure, the heart of UAMS' clinical programs, was outmoded and not suitable for renovation.

#### **Life Safety Concerns**

In 2006, general contractor, CDI Contractors LLC, of Little Rock, began work on the 540,000-sq-ft addition to the medical center. As with any hospital construction, firestopping was a major concern because of the life safety codes hospitals must follow. "Firestopping is used to seal openings in fire-resistance-rated wall and/or floor assemblies," explained CDI project manager Stephen Lane. "It func-

tions to contain fires within the areas in which they start, preventing smoke, hot gasses and flames from spreading throughout the building. The purpose is to isolate the smoke and fire from patients who cannot exit the building quickly. In essence, firestopping affords enough time to put out the fire - which is key to life safety in hospitals."

## Solicited Meetings with Firestop Manufacturers

Ensuring the integrity of fire separations, whether walls or floors, was a major life safety requirement for the new construction. Any openings that were improperly sealed, or left unsealed, would not only invalidate the fire-resistance ratings of wall and/or floor assemblies, they could also expose facility owners and general contractors to liability. To ensure maximum protection against loss due to fire, smoke, and toxic gases, UAMS and CDI contractors met with numerous firestop manufacturers to review their proposals/solutions for keeping life safety intact in the new construction.

Specified Technologies Inc. (STI), of Somerville, N.J., was selected. While other manufacturers emphasized their products, STI sales representative Kevin McKay stressed STI's Construction Barrier Management Program (CBMP). "STI had one of the most effective CBMPs I'd ever seen," said Lane. "When UAMS management saw the package STI was offering, they were amazed and recommended that we go with it. The CBMP was definitely the thing that separated STI from the rest of the manufacturers."



## **Construction Barrier Management Program**

"Our CBMP is a proactive construction program designed for the general contractor," explained McKay. "We are committed to eliminating problems, not selling more product. Our goal is to partner with the facilities and provide real management tools, superior training, innovative firestopping technology and products, as well as the industry's most complete UL testing program to help facilities like UAMS save money."

UAMS was particularly attracted to the standardization offered by the STI package - using one manufacturer to work with on the entire project. "They saw it as a way to eliminate confusion and mistakes, a way to simplify things down the line," said McKay. As part of the program, STI provided all submittal documentation per plans and specifications. "We also committed to providing consultation up front and throughout the project on firestop problem areas," added McKay. "In addition, we provided specific firestop installation training onsite. In this particular case, due to the enormity and complexity of the project, we recommended using a

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specialty firestop contractor to handle all project requirements."

The CBMP provided for random and scheduled reviews of the firestop installations to eliminate jobsite delays and inspection headaches. And, once the job was complete, STI committed to providing a final report outlining the successful completion of all firstop applications, including quality reviews, as well as facility owner maintenance manuals. "The maintenance manuals outlined what UL Classified firestop systems were installed and how to maintain/retrofit them when needed," added McKay.

#### **Specialty Firestop Contractor**

The specialty firestop contractor recommended by STI to ensure the installation of proper UL listings was Performance Contracting, Inc. (PCI), of Memphis, Tenn. The company is a certified professional fire protection specialist with extensive experience in installing, and documenting firestop systems in health care facilities. According to Eric Bender, senior estimator and project manager at PCI, "CDI liked the initial work we did to solve a firestopping problem in the hospital parking garage and asked us to come on board. They wanted us to meet with their subcontractors to discuss how we could help them out. We explained the critical nature of life safety in hospital settings and the training needed to apply firestopping technology to minimize risk. The subcontractors liked what we had to say and saw the importance of having a professional install the firestop systems. We were awarded the electrical, fire protection, plumbing and mechanical firestop work."

PCI not only performed the firestop work - which included penetration firestopping for pneumatic tube, plumbing, fire protection, HVAC, electrical, and other systems as well as top-of-wall firestopping for masonry firewalls - it also secured the installation of all smoke and sound barriers. "This was huge for CDI because STI could offer the whole caulking package and have it installed by professionals," added McKay.

#### **STI Products**

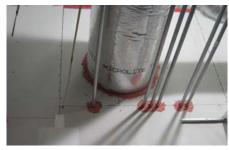
The caulking package included STI's Series LCI intumescent sealant, SSS Latex intumescent sealant, AS200 elastomeric spray and Smoke 'n Sound sealant. Bender insisted on using only STI products on the job. "I believe in STI products and I like working with the company. I used to sell firestopping products and I know what is needed to take care of customers. It's all about relationship. Various manufacturers I worked with eventually fell by the wayside. STI stepped up to the plate and we worked very well together."

#### **CBMP - An Ongoing Process**

Implementing the CBMP was on ongoing process. McKay was frequently at the jobsite. "He developed binders with a system reference to every possible condition," said Lane.

"Typically in our industry, salesmen say they can provide this information, but it rarely happens. We find conditions on the jobsite all the time that someone in the office hasn't thought of ...but Kevin was out there. He didn't just sell us on a system and say thank you very much and was on his way, he was out there all the time in the trenches with us. He'd get up on top of a ladder and show us what to do. He came out to the jobsite and trained 30 of our guys in one afternoon. He came up with solutions to challenges we encountered along the way. We came up with several "engineering judgments" for things that we came across on the site that people in the office had never considered. This





program worked because of its proactive approach to all conditions. Throughout the project, Kevin and UAMS were actively involved in documenting all the conditions that were encountered."

#### **Hospital Opening**

On Jan. 16, UAMS celebrated the opening of the new hospital expansion, replacing most of the patient care services in the original UAMS Medical Center building. "Within two days patients were transferred from the old building into the new facility," said Lane. "What we learned about firestopping on this project, the importance of sealing the barriers properly, we now incorporate into all of our other projects. Having a specialty firestop contractor do the installations was a great learning experience for us as well as an assurance that the job was professionally done. All in all, STI provided a complete package of firestop solutions and products."

This article is a compilation by STI including comments from CDI Contractors LLC project manager **Stephen Lane**, STI sales representative **Kevin McKay**, and Senior Estimator and Project Manager **Eric Bender**, of Performance Contracting, Inc.

# Healthcare, Effective Compartmentation and Contractor Operations



Containment may be required when working above ceilings. (Photo courtesy of Multicon)

#### By Bill McHugh

This article is a summary of a presentation by Doug Erickson, FASHE, CHFM, HFDP, Deputy Executive Director, American Society for Healthcare Engineering. Doug can be reached at derickson@aha.org.

Erickson delivered a presentation about healthcare occupancies, and what the facility management team expects of specialty firestop and other contractors working in hospitals. The program was action packed with great info. Read on....

The healthcare building occupancy is one of the most highly compartmented structures in today's built environment, and for good reason. "Because patients are sick, recovering, or in surgery, we don't have the freedom to move people vertically as fast," stated Erickson. "That's why there are horizontal fire and smoke barriers, to protect people who may not be able to be moved to another floor in a hurry."

When new facilities are built, great care is taken by professionals to design a facility that has a healing feel, and a safe, comfortable quiet environment that respects all stages of life. What most don't get to see and understand, is the relentless attention to detail that goes into structures of this type.

Details including infection, dust, and air control, along with specialty services from electrical, medical gases, communications, electric power, plumbing and fire safety, all must be understood, planned for, and executed by a contractor. Of all construction types, this one has an intense amount of service piping, cables, and air ductwork, which carry a wide variety of services to the patient in bed, waiting for treatment, or recovering.

Years of research and development from design professionals, healthcare engineers, and facility managers have resulted in structures that work for us, day in and day out.

## What Makes Construction Characteristics Unique?

Healthcare facilities are governed by several different code and regulatory agencies. Each state, province or region may have its own code requirements. NFPA 101, The Life Safety Code, (LSC) is a main document for guidance on life and fire safety systems. Local jurisdictions may have building code requirements that overlay some of the requirements within the LSC. Both, the Joint Commission and the Center for Medicaid and Medicare Services (CMS) apply the Life Safety Code requirements as well.

For compartmentation purposes, non-rated corridor walls that resist the passage of smoke are used to separate patient rooms from corridors, and to isolate patient rooms from treatment and staff use areas. On each patient floor, there is a smoke barrier, separating areas to create compartments for a well organized and rehearsed horizontal movement of those patients who cannot be moved from the floor in a rapid fashion.

Smoke barriers are defined in IBC Chapter 7 as one- hour fire-resistance-rated assemblies, with continuous fire and smoke resistance across the barriers. Smoke barriers can be made of gypsum wallboard used in a tested system, such as a U400 series system from the UL Fire Resistance Directory, built exactly as represented in the tested system design. Gypsum wallboard, concrete, concrete blocks, and other combinations of materials as allowed by code provide the basis for assemblies that are fire-resistance-rated and resist the passage of smoke.

Floors are also fire-resistance rated, made of various combinations of concrete including pre-cast concrete, and other systems as tested or equivalent fire resistance. Floors are an integral part of smoke and fire barriers as they form the base and provide continuity for the fire-resistance rated and or smoke-resistant wall assembly.

Piping, cables, and ductwork abounds in healthcare facilities, with huge concentrations of service items above dropped ceilings, that must penetrate smoke barriers. Penetrating items such as plumbing pipes, electrical conduits, cables, cable trays, and bus ducts, are treated with a firestop system to maintain the continuity of the barrier with a firestop system that has a fire rating equal to the barrier, and an "L" Rating. L Ratings with

firestop systems simulate the movement of smoke through a penetration firestop system in a CFM/SF opening area. Then, there are varying requirements for fire and smoke dampers, and fire rated door assemblies in these walls, depending on the code the facility must comply...NFPA Life Safety Code and or International Family of Codes, Building or Fire. The International Codes and NFPA Codes differ in these areas.

This all seems easy. We just design and specify for performance to these codes, and off the project goes. Well, life isn't that easy.

#### **Conflicts**

Here's where things get dicey. Although it's not the architect's job to specify the methods and means for building construction, without some mandated coordination, mayhem and cost overruns can turn a good design sour in the owner's mind through no fault of the design professional. If standards for the locations of mechanical, electrical and plumbing systems installation are not specified, then structural items may get in the way. Without standard distances for separation of ductwork from the ceiling or other service pipes, cables, etc., important air spaces and steel angles or firestop systems may not be able to be installed properly, compromising life safety in the building.

If that wasn't enough, steel columns and beams may meet mechanical, electrical and plumbing items and conflict. This could require unplanned hole drilling in structural steel, walls and floors, which may result in cost overruns.

#### **Solutions**

In new construction, suggested standards for placement of service items above drop ceilings can reduce conflicts where trade items run into each other. This can eliminate the massive finger pointing, and enormous extras - not to mention headaches for the trades that result from lack of design standards for placement of these items where they meet other construction.

The result can be cost savings in mechanical, electrical, plumbing and communications system installation, in addition to saving structural items from getting holes cut in them. Another big result is that firestopping and fire damper costs are optimized. Because the items are separated, hole locations and sizes can be planned and firestop system designs optimized while providing maximum protection against fire and smoke.

When problems with hole sizes, spacing between penetrating items and distance to walls, floor/ceiling assemblies and structural items are planned for, installation costs decrease exponentially because more tested systems exist and labor is able to access areas easily.

At the Pearson International Airport in Toronto, owners representative Skidmore Owings and Merrill experienced these conflicts firsthand on Phase One of the airport expansion. (See Life Safety Digest, Summer 2006 and Winter 2007 articles, archived at FCIA.org, magazine)

On phase two, there were rules established for the distance that ductwork can be located from the ceiling, walls and other service items. Separation of piping was specified. All this resulted in being able to install firestop systems as shown on tested and classified firestop systems. This saves reworking of structural, mechanical, electrical and communications systems, in addition to relocation of fire barriers, and smoke barriers. For more specifics, read the articles in Life Safety Digest.



## How does this apply to Healthcare

"If you want to see a crazy sport, try treating penetrations of pipes, cables, ducts and structural items that are not where they are supposed to be as they penetrate a wall or floor," stated FCIA president Bill Hoos.

Just walk into a healthcare facility and ask to see above the drop ceiling as it approaches a fire-resistance-rated door assembly. "It's nuts... there's ton's of service items up there. We have a lot of skinny people that are like gymnasts working to firestop and smoke protect these holes in fire and smoke barriers around the cables, pipes and other items," said Hoos. "When it's hard to get to, it eats up tons of time, and is difficult to provide optimum protection," seconded FCIA past president Tom Hottenroth.

"We've been retrofitting health-care occupancies for years, and see where some planning on the architect/engineer's part could have saved tons in installation and maintenance costs," stated Jodi Clem, vice president of PREVENT, a firestopping and fire, fire-smoke, and smoke damper specialty contractor. "If the pipes and ductwork were spaced properly so we could get to the barriers, compliance costs to maintain the barriers integrity may decrease significantly.

## When Does Maintenance and Management Start?

"Healthcare occupancies are very dynamic," stated Bob Hasting, of Specialty Firestop Systems in Olympia Wash. "As soon as new technology appears that could save a life, the healthcare facilities are all over it...and that usually means more communications systems, power, plumbing, gas piping, wiring, ductwork all located above the ceiling, and where patient care operations must continue." That means special training and special people who understand the demanding working conditions in healthcare occupancies.

Contracting personnel on new construction projects do not have to worry about what those in occupied healthcare environments do - a loud

radio, bad language, talking loud, making noise with power and powder-actuated tools - hey, it's a construction site, who cares? In occupied healthcare, it's a big deal. People need safety training, may need drug-free status, background checks, understand the cleanliness and sound issues and the need for quiet while people sleep, rest, heal, or prepare for treatment. "That takes a special talent," stated ASHE's Erickson. "The workers that show up on our jobs have to be extra sensitive to cleanliness, construction isolation, sound, and use of bad language, because our product is a safe healing environment for the patient, and the contractor can't mess that up when performing their work".

So, management of the wall penetration process and maintenance starts

right after building completion. Building Information Modeling Systems provide documentation of the systems installed during building erection, and a roadmap for control of ongoing change.

#### What Do the Regulators Say?

The regulators have put fire and smoke barriers and means of egress into their sights, and have issued warnings to healthcare facilities that they will be watching for these violations, and to be ready. Regulators are involved in this occupancy more than almost any other building type. CMS and local AHJ's, state licensing requirements, and State Fire Marshals' offices are all involved. Private groups that regulate include the Joint Commission, DNV, AOA,



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CMS conducts annual surveys in non Joint Commission accredited organizations, and validation surveys...they come in with as many people for as long as it takes to review the facilities, leaving facilities in a position to continuously develop corrective action plans.

The Joint Commission visits every three years, and has a staff of life safety specialists. Facilities are expected to provide a statement of condition with self disclosure of deficiencies, with Plans for Improvement (PFI), and Interim Life Safety Measures (ILSM) for those more significant code deficiencies.

DNV and AOA are fairly new to the accreditation program operations, but also require compliance with the Life Safety Code.

## What Should Healthcare Facilities Do?

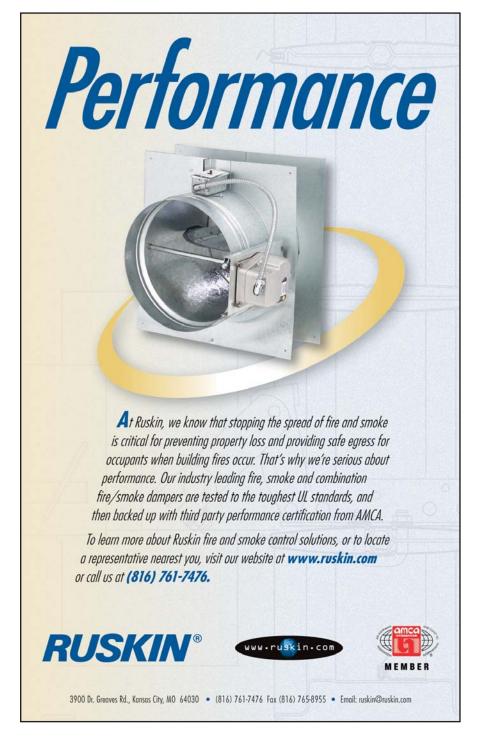
First, in new construction, invest in Building Information Modeling to resolve conflicts before they become cost overrun drivers. In renovation projects, take it in stages, and remove out-of-service items during part of routine projects....and hire a specialist firestop contractor. "When new piping is run, have the unused piping taken out at the same time, and let the contractor sell it for scrap, with shared revenue with the facility," stated contractor Aedan Gleeson, Gleeson-Powers, Inc. There's a revenue stream in the copper in pipes and cables, as well as the steel.

#### What's the Rules for Contractors Working in this Environment?

Whether a specialty firestop contractor, damper inspection group, or door inspection team, "Remember, you are a guest in our house," stated Erickson at FCIA's Boston Education

and Committee Action Conference. "You are expected to know the rules for our facility. Compartmentation is key in these healthcare facilities, and we have a lot of renovation constantly going on in occupied environments, as we continue to upgrade our facilities and services regularly."

There are an estimated 5,000 patient deaths per year related to airborne infections acquired due to construction and maintenance in healthcare facilities. Therefore, containment of airborne particulates and a strong infection control program is a top priority, and the performance of an





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Infection Risk Control Assessment is vital. The assessment is performed by the owner and establishes special work practices prior to the start of work. Minor and major projects may require conducting an ICRA; it all depends on the patient environment and the type of work being performed.

Healthcare facilities have patients that are immuno-compromised, elderly, infants, and patients in intensive care. Particulates "hang out" above ceiling tiles in these facilities, right where your crews are working. Molds form in dark, warm areas....above ceiling tiles is a perfect place for growing mold spores. While they don't do the patients any harm above the ceiling, once a construction or maintenance worker disturbs this environment millions if not billions of particles may be released into patient care areas. At times, contractors must isolate areas where they are working to eliminate the spreading of dust and other airborne particulates.

Therefore, when damper and firestop-containment workers are in patient-occupied spaces or in corridors, removal of ceiling tiles to get to penetrations and climbing through access panels has to be done with great care. The worker needs to know the Infection Control Risk Assessment before the work is performed. A permit may even be needed from the facility before entering these confined areas.

Documentation of work performed is needed for regulators - and it's got to be accurate, as it will be checked at some point by the on-site surveyor or fire marshal.

#### **Workers Are Key**

In healthcare, patients come first. This is why healthcare organizations are in business. Patient privacy is a big issue as well. If you see someone

you know in a hospital, it's not your place to spread the word that the person is there. It's their business, not yours.

Worker behavior is key in this occupancy. Bad language, music choices, reading materials, communication and courtesy are big deals. Plus, all hospitals have no tobacco policies within the building and some of them have banned it on their campus..

Just when it seems we've covered things, there's more. Where you park is an issue, and must be approved by the facility, as parking can be at a premium for patients and staff. Special entrances for contractors, which elevators contractor personnel can use, designated toilets, cafeteria usage, and access to patient care areas are all points that must be understood by contractors before starting work.

Healthcare organizations expect that workers in existing structures communicate effectively with staff, understand and follow the rules and standards of the organization. FCIA Member specialty firestop contractor management incorporates these items into their quality management system. "When audited by FM 4991 & UL's Qualified Firestop Contractor Program auditors , it becomes a quantified qualification", stated FCIA Accreditation Chair Gleeson.

In new construction and renovation projects, specialty firestop contractors are well suited to deal with the many electrical, piping, and other service items installed throughout the facility that penetrate fire-resistance-rated and smoke-resistant construction. They expect that the contractor will try to create firestop systems that are not invasive, standardize on product line where possible, and keep engineering judgments to a minimum. Most



Working above ceilings requires care. (Photo courtesy of Multicon)

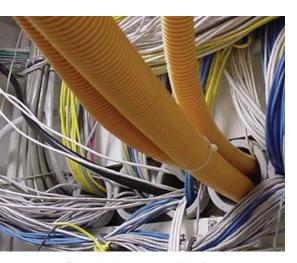


Planning minimizes firestopping costs. (Photo courtesy of Firestop Solutions)

importantly, a trained workforce that is able to document applications is mandatory.

"Advanced planning allows use of products and UL Systems that take into account life cycle requirements of the structure. A level playing field for bidding purposes is created...while standardization allows better material prices, manufacturer support, easier inspections, and smoother job progress, " said FCIA's Hoos.

Documentation is an important aspect of meeting the demands of private and public regulators. Walls



Poor planning can result in firestop challenges and increased cost (Photo courtesy of FCIA)

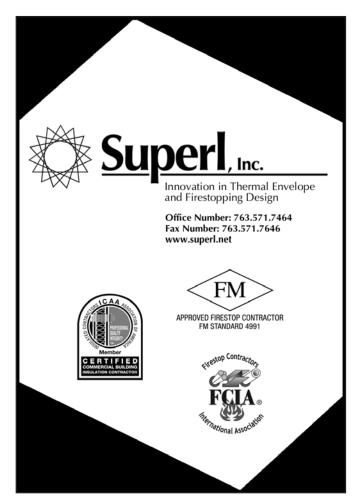
must be labeled for the level of protection. Smoke, fire, and non-rated are all designated so the many trades who may work on these fire and smoke barriers know which walls are which. At the end of the day, an effective program is needed to document firestop system installation and damper/door inspections. This action provides evidence to the Joint Commission, CMS, and other regulators that the facility is implementing a plan for action.

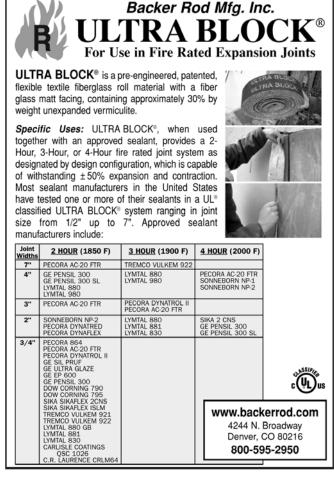
As you can see, although working around fire resistance rated and smoke resistant assemblies in occupied healthcare facilities looks like any other construction project, it couldn't be further from it. Contractors need to understand the rules of each healthcare organization. In new construction, management of where the pipes, cables, etc. are running needs to be compared to structural item locations.

If these important points are coordinated, value can be added by all involved in the process to construct and maintain safe, healing patient care work in the healthcare environment.

Life Safety Digest thanks Doug Erickson, FASHE, for the very content filled program provided at the FCIA Education and Committee Action Conference to make this article possible. His program to FCIA was a true sharing of his vast knowledge of this healthcare occupancy, and we truly appreciate him sharing experience with FCIA and Life Safety Digest.

**Bill McHugh** is Executive Director of Firestop Contractors International Association, based in Hillside, Ill. He can be reached at bill@fcia.org.





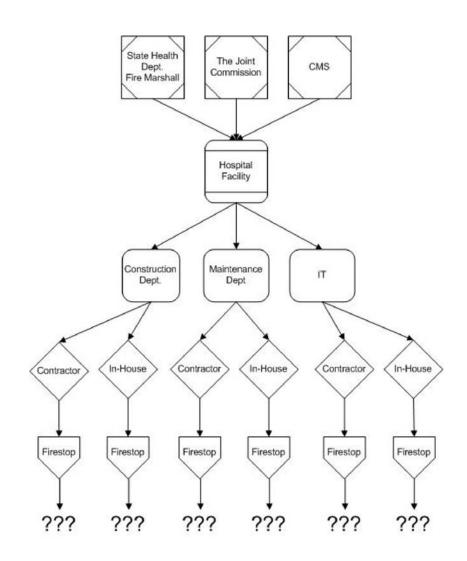
## The Importance of a Barrier Management Program

#### By Renée Robison Jacobs

Healthcare facility managers throughout the nation are continually reminded of the perpetual nightmare of firestopping deficiencies throughout their facilities. The looming threat of the Joint Commission continual preparedness, electronic SOC<sup>TM</sup> (Statement of Conditions) online Requirements Improvement (RFI) reporting negate the age-old approach to avoiding the hidden holes in the walls. Joint Commission Standard LS.02.01.30 (Health Care) says that the organization must design and maintain openings required for necessary features to contain fire and smoke to a compartment or floor. What historically had been "out of sight, out of mind" is a now a focus of the Joint Commission life safety surveyors.

The new 2009 Joint Commission standards are implementing stricter scoring during surveys. Elements of Performance (EP's) that relate to firestopping are now rated at a criticality level "C", where the number of times the EP is not met by the facility dictates the ultimate survey score. The new standards carry stricter ramifications for not sufficiently addressing interim life safety measures (ILSM's) that have been identithe fied on Statement Conditions<sup>TM</sup> Part 4: Plan for (PFI) Improvement as well. Temporary construction barriers that are not adequately smoke-tight, including correct firestopping, may be identified as a PFI and be subject to corrective action.

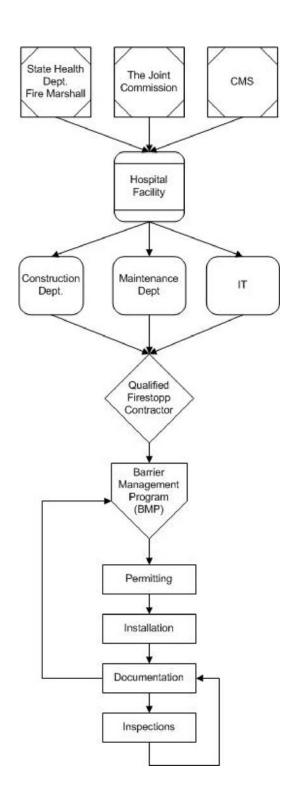
Requesting capital funding in these



Facility without a Barrier Management Program installing fire stopping

difficult economic times for a problem that never appears to be solved is challenging, and the request is frequently rejected. The question that facility managers and administrators alike should be asking themselves is, "when will we stop the bleeding?"

Firestop contractors are ready at the drop of a hat to appear at the facility with "red caulk" in hand to "fix" all of the problems. However, is this really fixing the problem or prolonging the inevitable? There is an unsaid financial benefit for the contractor to have firestopping installers that end up as a permanent fixture, seemingly getting the problem under control. However, in reality, the



Facility utilizing a Barrier Management Program

problem only continues, financial outlay continues and the firestop contractor ultimately benefits.

The question that facility managers and firestop contractors alike should be asking themselves is how to put a STOP to the problem. The ultimate goal should be that only a qualified firestop contractor is installing firestopping, as well as administering a barrier management program (BMP). Facility managers should strive to have a fully compliant building not just because it's required by regulatory and accreditation agencies, but because we are all in the business to provide a safe environment for our patients, visitors and staff.

In an ideal world, a facility's BMP should include a permit program, 100% documentation of all firestopping in all rated walls, 100% documentation of all penetrations requiring firestopping in rated walls (deficiencies), correctly firestopped penetrations and continuous maintenance of the integrity of all rated walls. The question that remains is how to reach ideal goals without creating a financial burden for the organization.

The top four challenges in the implementation of an effective BMP are: 1) who should implement and manage the BMP, 2) what software programs are readily available to purchase, 3) how to create single-point control of all entities penetrating rated walls and 4) preplanning and education of architects, contractors, facility managers and departments that direct work impacting rated walls.

In recent years, with facilities demanding documentation, the burden has been placed upon the firestop contractor to produce a database (Microsoft Excel, Access, etc.) that is readily available and easy to customize. Unfortunately, with multiple contractors working in a facility - along with information technology contractors running cables randomly - the facility manager is left with multiple databases in multiple formats, none of which provides a consolidated database. When a penetration is accessed multiple times by different contractors, the integrity of the database and reporting is negated.

Facility managers, with limited time and resources, are in desperate need of assistance from firestopping contractors and manufacturers to develop and implement a BMP that captures data in the field and can act as a living database. Turnkey solutions to firestopping challenges for both existing facilities and new construction are the key to success. When a turnkey solution is implemented, the amount of firestopping by the contractor is not reduced, just managed more effectively. Costs for the BMP can be either integrated into the cost of the work or handled as a separate project or consult-

ing engagement.

Several companies are developing, or have already developed software solutions for firestopping documentation and inspections. The key to an effective BMP software solution is data capture of firestopping documentation in the field, how the barriers are managed once the penetration is documented and how this relates to the building architectural plans. The future should bring solutions that are Building Information Modeling (BIM)-based as this software is developed and software costs decrease.

Creating single-point control, logically within the facilities department, is a daunting task for most organizations. When an information technology department or a medical equipment vendor runs cable without the knowledge of the facilities department, it is frequently an unmanageable situation. Strict policy and procedure supported by top management is imperative to the success of the BMP. This enforces the BMP on all departments, regardless of the corporate reporting structure. Knowledge of the residual cost and regulatory liability that results from departments not following policy is key to strict enforcement.

Once the policy and procedures are developed, the preplanning and education process is imperative for implementation of an effective program that has the endorsement of all stakeholders. New construction and remodel alike benefit from a well-designed path for electrical conduit and cabling runs. Efficient design should include systems that are conducive to future cable runs and easy modification. If the system cannot be easily modified or additional cable easily fed through the existing path, the natural inclination of the contractors is to add additional penetrations in the barriers, thus creating additional cost.

Architects and engineers can benefit from education and directive from the facility to design a well-planned path and system that is a part of construction documents. These simple additions to construction documents, especially where stacks of telecommunication and electrical closets are concerned, remove the design responsibility from the installation contractor, minimizing the quantity of penetrations and cost. Additionally, it provides a consistent approach that ultimately allows for the barriers to be managed throughout the life of the building.

Up-front communication and coordination between the firestopping contractor and other trades can further reduce the amount of firestopping required and, therefore, lower costs. When trades are informed of the impact of penetrating rated walls and then subsequently given specific direction on the best methods to create holes in the walls, the amount of firestopping can be significantly reduced. In lieu of a tradesman putting a hammer through a wall to create a one-foot square hole to accommodate a 4-in. conduit, the tradesman is told to create a hole that can be firestopped with an approved UL system. This minimizes time and is cost-efficient, since an engineering judgment is not required.

With tightened budgets and increasing regulatory requirements, the logical approach to firestopping is investing in a BMP. Healthcare facilities' reduced staffing and budget reductions are creating a demand for the qualified firestop contracting community to take a hard look at providing solutions in addition to being an installation contractor. The incremental cost of implementing a BMP into firestop installation provides a tremendous payoff by reducing future liability and costs. By re-thinking its approach, the firestop contracting community will have the attention of facility managers, architects, engineers and the general contracting community. For a number of years general contractors and subcontractors have been desperately seeking a solution to this headache and liability. It is past time to create effective solutions that benefit all parties involved and ultimately create an extremely satisfied customer, the facility manager.

Renée Robison Jacobs, CHFM, job as vice president of facilities and construction for all 11 Saint Luke's facilities, both in the Kansas City metro area and regionally, involves oversight of all areas of design, construction, renovation, master planning, plant operations and maintenance, and oversight of the "New Saint Luke's," Saint Luke's Hospital's \$330 million multi-phase new construction and renovation. Jacobs' passion for firestopping is a result of managing construction, renovation and maintenance of healthcare facilities and frequently dealing with the lack of an effective barrier management program.

Renée Robison Jacobs is a Certified Healthcare Facility Manager and has more than a 20-year career in construction project management and healthcare facility management. She is Vice President, Facilities and Construction, at Saint Luke's Health System in Kansas City, Mo.

#### **Industry News**

#### **Industry News**

**DHI Fire Door Inspection Program Growing** - FCIA's relationship with the Door and Hardware Institute continues strong, with DHI participating in the FCIA / UL Total Fire Protection Systems and Total Fire Containment Symposiums. DHI is offering more classes May 10-17. Check out http://www.dhi.org for more info.

**Fire Rated Glazing Industry** - At the last ICC Code Technology Committee Meeting, the fire-rated glazing industry came to a consensus about labeling. "It's about the same as the language in the current code," stated Bill Koffel, consultant to the fire-rated glazing industry and GICC.

**Firestopping and Luminescent Markings Go Together** - At FCIA's Education and Committee Action
Conference, the photoluminescent marking industry
informed us about how to mark egress stairwells with
systems to meet the new International Fire Code

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Requirement for these products. The PL industry looks to FCIA members as technical experts in effective compartmentation, and these systems seem to be a natural fit to the zero tolerance mindset of the FCIA member firestop contractor firm's value proposition. Many thanks to Phil Befumo, president, Pholuminescent Safety Association (PSA) and the team from PSA.

FCIA in Dubai, UAE...Again - The March FCIA Firestop Symposium in Dubai went so well, UL followed up with a "Total Fire Containment Solutions Symposium." V Jagdish from UL India and Sumit Kumar, plus speakers from the FCIA / UL Total Fire Protection and Compartmentation **Systems** Symposiums brought industry knowledge to attendees in Dubai. The FCIA Education Program and UL DRI Exams were administered to 10 individuals, aspiring to become UL Qualified Firestop Contractors. STI's Charbel Tagher and Bill McHugh worked together presenting the proper Design, Installation, Inspection and Maintenance of firestop systems.





Delivering the keynote address, JAFZA's Nutankumar Manatowar said, "Total Fire Containment Through Passive Fire Protection is the responsibility of everyone...the consultants, contractor-installers, manufacturers, facility managers and authorities." His perspective was that we need to look for best practice examples to save lives, by eliminating compromise of passive life safety systems.

The gratifying part of the Dubai program for FCIA is the result of several initiatives by FCIA's boards, past and present, who have reached out to other compartmentation industry partners to help make our industry better. FCIA started its compartmentation initiatives with the Door and Hardware Institute's leadership, and continues to work together with Scott Sabatini, DHI president, and staff Bill Johnson and Jerry Heppes. We've also grown our relationships with the rolling door, fire damper, firerated glazing, concrete and gypsum industries.

The results? First, it is clear FCIA has helped contrac-

#### **Industry News**

tors, architects and AHJ's worldwide understand what the proper Design, Installation, Inspection and Maintenance of Effective Compartmentation should be for fire and life safety; and that it is an important element in new construction and renovations.

Second, driving the proper Design, Installation, Inspection and Maintenance of Firestop Systems - while working with the other compartmentation features industries such as fire dampers, fire-rated swinging and rolling doors with builders hardware, and the gypsum or concrete wall, and floors, to build standards for quality for each component - means our industry can say it's reliable with confidence.

Fire Damper Industry Showcased - At the Total Fire Containment Symposium in Dubai, there were no less than three speakers on fire and smoke dampers. Greenheck's Mark Belke, Ruskin's Rick Cravy, and UL India's Sumit Khanna presented a very extensive program on how fire damper technology has evolved in the last 20 years. FCIA members install and inspect fire and smoke dampers in many occupancies. Requirements in healthcare occupancies for inspection include commissioning, one-year post commissioning, and every six years thereafter. In all other occupancies, NFPA 80 requires inspection every four years.

**FCIA** Education and Committee Action Conference, Boston - The 2009 FCIA Education and Committee Action Conference was well attended.

- Codes FCIA's code consultant Bill Koffel recommended the industry work on important issues this cycle. He advised we spend time educating, in addition to code development proposal submissions.
- The meeting of some of UL's Standards Technical Panel study groups on environmental exposure, movement, labeling brought agreement that we move forward with development of a proposal. For more, see the Standards Corner.
- Doug Erickson's program from the American Society of Healthcare Engineers brought the house down. See the summary in this issue, Life Safety Digest.



• FM Global's impressive fire testing laboratory was opened to FCIA Members for a tour. We saw the largest cone calorimeter in the world measuring a

monster fire, and much more. FM Global field engineer, Jordan Collyer, offered a great program about the life of a field engineer, while discussing how FM 4991 contractors can provide value to FM insured customers. FM also took the time to offer FCIA member FM 4991 contractors a great tour and evening out in Boston. Thanks, Jeff Gould, Rich Ferron, Len DeAngelo and staff for your hospitality.

• FCIA's code consultant Bill Koffel presented FCIA's thoughts for the 2009-2010 Code Cycle, focusing on the proper Design, Installation, Inspection and Maintenance of firestop systems. We formed many new relationships with building officials, fire marshals and industry members these past two cycles, and believe we have some good proposals going forward. FCIA was pleased to work with the International Firestop Council and others during our code proposal development process. Look for FCIA's and other organizations interesting fire-resistance-rated and smokeresistant effective compartmentation proposal analysis in the next Life Safety Digest in September.

**FCIA 10-Year Anniversary Firestop Industry Conference & Trade Show** -From small beginnings in January 1999 at UL's Chicago headquarters, FCIA has grown into a worldwide organization of over 240 firms, making big contributions to life safety and fire / smoke protection through quality management standards, inspection initiatives, communication through conducting symposiums, conferences, the FCIA Manual of Practice, Enews, Life Safety Digest...and more. visit FCIA.org for more info.

#### **Code Corner**

ICC CTC Meets - The International Code Council's (ICC) Code Technology Committee met recently. At the meeting, it was reported by features committee cochair, Dave Collins, FAIA, that the study of height and area in buildings is not able to move forward any fur-



ther at this time, and a recommendation was made to disband the study. "There is little the committee can do to effect change, because it cannot find data to relate to improved safety, with limited the resources available. We recommend that the study group be terminated," said Collins.

According to Collins, the group wants to provide a white paper, which will provide a basis for further research. "We do have a history of why we've been where...but need good research to show why heights and areas are conservative or liberal, to base the decisions to change the height and area tables in the code," he said.

ICC CTC chair Heilstadt added that, "height and area has been under study for several decades. Someday, we'll find a way to handle this. Thanks to California State Fire Marshal Kate Dargan and Dave Collins for working on this important effort....we are a starting point for the next group.

**FCIA at IAPMO** - FCIA has opposed a move by the United Association of Plumbers, Pipe Fitters Union of (plumbers, sprinkler fitters) to claim firestop workforce jurisdiction around piping, using The International

Association of Plumbing and Mechanical Officials (IAPMO) Code Development Process and ASME Standard, A 112.20.2.

Our problem in the IAPMO environment is with a passage in Chapter 3 that connects Chapter 14 where ASME A 112.20.2 resides, that refers to, "journeyman plumber." In section 8.2, we objected to:

"The certified firestop installer shall have a minimum of four years of documented practical experience recognized by the ISO / IEC 17024 ANSI Accredited third-party certifier, in the installation of piping systems."

It's FCIA and others' belief that firestopping is a construction industry issue, and not a piping and plumbing issue. Firestopping is not about the penetrating items, it's about the system that returns the wall and floor to the fire rating it had prior to poking holes in the fire-resistance-rated or smoke-resistant wall or floor assembly. Most importantly, the plumbing code should not specifically mandate work to any trade.

The FCIA Firestopping ANSI BSR Hearing is Aug. 6 at,10 a.m., at the ANSI headquarters in New York. We request that industry and AHJ's write letters to ANSI's BSR at their New York headquarters. Tell ANSI's BSR how it's wrong for a union to use the plumbing code to create jurisdictional claim for fire resistance, when their consensus should only include plumbing; and that mandating four years experience is not justified and adds cost to a building that's not justified.

## Life Safety Digest 2009 Industry Calendar

#### Sept. 16 to 25

DHI's 34th Annual Conference & Exposition, Orlando

#### October 17 to 22

Society of Fire Protection Engineers Annual Meeting Scottsdale, AZ

#### Oct. 24 to 31

ICC Code Development Hearings, Baltimore

#### Nov. 1 to 4

ICC Annual Conference, Baltimore

#### Nov. 10 to 13

FCIA 10 Year Anniversary & Firestop Industry Conference & Trade Show Key Biscayne, FL





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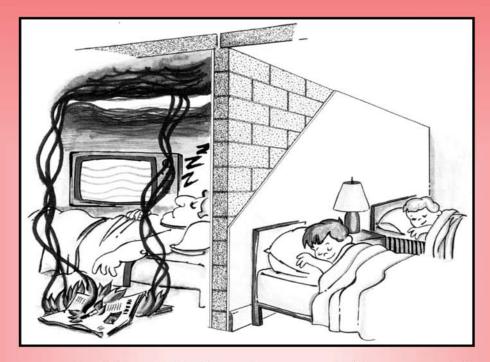
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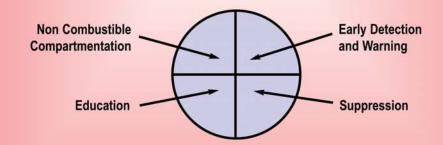


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