

THE MAGAZINE OF EFFECTIVE COMPARTMENTATION

Life Safety DIGEST

WINTER 2019

The Impact of New Structural Fire Engineering Standards
Fire Code Requirements and “Inventory”

How To Construct a Fireproof Contract: Understanding
the Difference Between Firestop Warranties and Guaranties

Checking it Once, Checking it Twice..
Another Reason to Ensure OSHA 300 Logs are Accurate
Control the Door



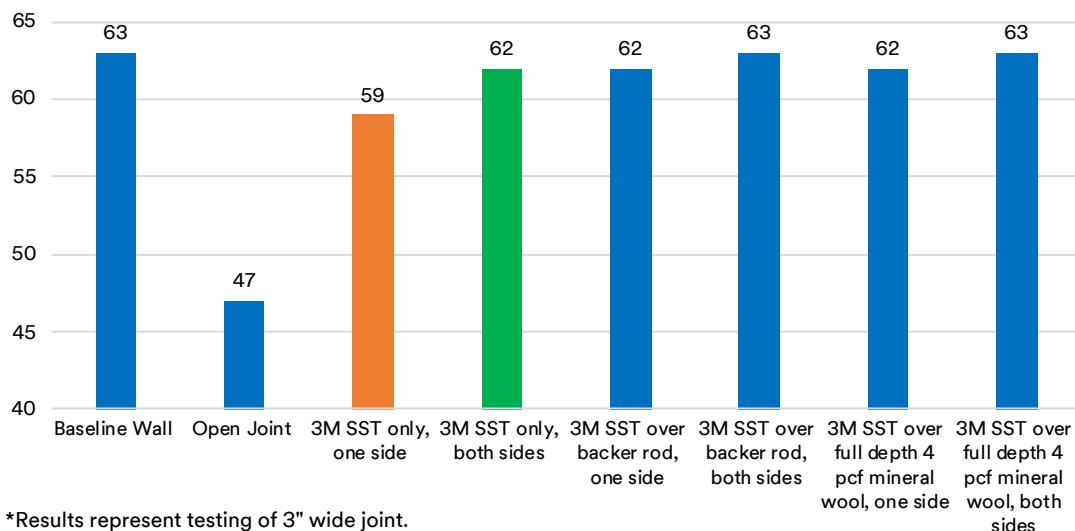


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LIFE SAFETY DIGEST

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WINTER 2019

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EDITOR'S MESSAGE

FCIA Celebrates 20 Years.

In 1998, seven friends and colleagues came together over a series of three gatherings, and thus the Firestop Contractors International Association was born. These seven original members formed the FCIA Steering Committee and the first FCIA Board of Directors. Together, they identified a set of goals for the organization and outlined an ambitious schedule to get there. The goals centered around improving the quality of installed firestopping to ensure its performance when called upon by fire.

The inaugural FCIA Conference was held at UL in Northbrook, IL in January, 1999. Here, the Steering Committee's goals were affirmed by another group of 40 people, representing roughly 30 companies.

The specific goals set by the Steering Committee and affirmed by the First Meeting attendees were:

1. Find a way for specialty firestop contractors to set themselves apart quantitatively from those who think firestopping is a bunch of red caulk.

- This resulted in the Accreditation Committee working on the FM 4991, Standard for the Approval of Firestop Contractors and the UL/ULC Qualified Firestop Contractor Programs.

2. Build a body of knowledge about firestopping where people can learn about the industry.

- This resulted in the FCIA Technical Committee developing the FCIA Firestop Manual of Practice, currently in its 7th Edition.

3. Get involved in the building and fire code development process.

- This brought the Code and Standards Committee and a future where the quality of installed firestopping is affected through Special Inspection and the documentation and inventory of fire-resistance. FCIA continues to bring the field perspective to the code and standards development processes.

4. Get the word out about the firestop industry and the importance of the specialty firestop contractor in order to improve the quality of installed firestopping through specifications and better educated purchasers (general contractors and building owners and managers), to ensure it is bought and installed correctly, thereby functioning as intended when called upon by fire.

- The development and implementation of FCIA's website, newsletter, educational programs and webinars, the *Life Safety Digest* magazine, presence at trade shows and other industry events, and more is all a direct result of the Marketing Committee's, including all current and past Committee members',

We at FCIA are grateful to all the Members who have volunteered their time and talents by serving on the FCIA Boards and Committees over the last 20 years. Thanks also extends to ALL FCIA Members past and present - those who saw and supported the vision and who joined at the beginning, those original Members who have stayed with us, as well as those who have joined along the way and those who may have moved on for whatever reason. It is this support and collective commitment to the shared goals of the FCIA that has provided the funding for FCIA to do what it does so well, bringing FCIA to where it is today.

With the commitment of FCIA Leaders and Staff, we'll continue to advocate for fire- and life-safety through the proper Design, Installation, Inspection and Maintenance of Firestopping - the 'DIIM' of Firestopping - and Effective Compartmentation.

We hope you enjoy this issue of *Life Safety Digest*. Next year marks the publication's 15th Year. You won't want to miss it. 🔥

Sincerely,

A handwritten signature in black ink, appearing to read 'Wm McHugh'.

William McHugh, Publisher

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THE IMPACT OF NEW STRUCTURAL FIRE ENGINEERING STANDARDS

We Structural fire protection serves as an integral fire-safety system that becomes critical in the case that active systems are rendered inoperative or are insufficient for a specific fire hazard. Structural fire protection is most commonly specified using the long-standing prescriptive design method, in which the fire-resistance of structural components is qualified through standard furnace testing with a specific heating exposure and acceptance criteria.

As introduced in the fall 2019 *Life Safety Digest* article, “Introduction to Structural Fire Engineering”, structural fire engineering is an emerging performance-based approach to structural fire protection that involves the explicit design of structural systems to adequately endure thermal load effects from uncontrolled fire exposure. Performance-based design turns the traditional design paradigm upside down as required performance is the starting point for the design, which encourages creative thinking and the use of innovative tools and technologies¹.

As a follow-up to the fall 2019 article, this article examines the industry impact of new structural fire engineering standards, with a focus on “restrained vs. unrestrained” fire-ratings and structural fire protection variances.

NEW STANDARDIZATION

In recent years, the U.S. structural engineering community has begun to embrace structural fire engineering as a means for providing reliable structural fire-safetyⁱⁱ. As introduced in the aforementioned article, new standards have emerged to support the growing practice of structural fire engineering in the U.S. ASCE/SEI 7ⁱⁱⁱ is the parent standard for structural engineering for the International Building Code (IBC)^{iv}, and now contains provisions that are meant to regulate structural fire engineering. Supporting the seminal provisions of ASCE/SEI 7, the first-of-its-kind ASCE/SEI Manual of Practice (MOP) No. 138 (Structural Fire Engineering)^v was recently released, which provides best practices for conducting structural fire engineering analyses. Lastly, the new SFPE Competency Standard^{vi} reinforces ASCE/SEI 7 provisions which require comprehensive structural analyses as part of any structural fire engineering design.

The new standards described above clearly define the required evaluation metrics of structural fire engineering. Unlike the prescriptive design method, which relies on the metric of *fire-resistance*, structural fire engineering requires the evaluation of relevant structural limit states and/or simulation of structural system response with respect to explicit performance objectives. Notably, IBC Section 1017 limits egress travel distances to exits (e.g., stairways), but it does not limit the total evacuation time. As the vertical

remoteness of occupants from the point of discharge to a public way (e.g., a public street) is increased, the time required to evacuate the building will increase^{vii}. Unlike the prescriptive design method, structural fire engineering requires the designer to explicitly contemplate the consequences of increased occupant evacuation times and the reliance on building refuge areas to meet other code requirements.

In addition to required evaluation metrics, the new standards described above clearly define the requisite competencies for practicing structural fire engineering. Unlike the prescriptive design method, structural fire engineering cannot be executed by any type of design professional. Rather, structural fire engineering requires the participation of a structural engineer. The skills and competencies of fire protection engineers are certainly applicable to structural fire engineering; however, the need for structural engineering expertise cannot be avoided or circumvented in any case or circumstance.

RESTRAINED VS. UNRESTRAINED FIRE RATINGS

Many listings in the UL Fire-Resistance Directory^{viii} permit a lesser thickness of fireproofing for steel structures (or less concrete cover for concrete structures) to achieve a certain fire-resistance-rating if the designer can demonstrate that the assembly will be “restrained” when it is constructed as part of an actual structural system. Otherwise, the assembly must be considered “unrestrained.” IBC Section 703.2.3 states that “fire-resistance-rated assemblies tested under ASTM E119 or UL 263 shall not be considered to be restrained unless evidence satisfactory to the building official is furnished by the registered design professional showing that the construction qualifies for a restrained classification [...]” However, restraint of thermal expansion due to fire exposure is a complex phenomenon that cannot be easily simplified in practice, particularly in a binary fashion. Also, neither referenced standard provides any precise method for defining “restrained” or “unrestrained” conditions for a given fire-resistance-rated assembly within in-situ construction. Thus, the IBC effectively abdicates responsibility for defining in-situ restraint to designers, and so much confusion remains.

In a furnace test, an assembly is considered “restrained” if it bears directly against the edges of the furnace at the outset of the test (e.g., Figure 1). In this case, furnace boundaries act as the means of restraint which provide near-rigid stiffness (i.e., approximately 850,000 kip-in of flexural stiffness per the UL Directory), and this stiffness remains constant throughout the fire test since the furnace boundaries are highly insulated. If the assembly is made of two components (e.g. composite steel beam and concrete slab assembly), both components would be restrained equally by the furnace boundaries,

which differs substantially from common in-situ conditions. Alternatively, an assembly is considered “unrestrained” if it is free to thermally expand without contacting the furnace boundaries (e.g., Figure 2). Either test condition fails extraordinarily to capture the complexity and variety of actual restraint conditions observed in-situ during a [fire](#).^{ix}



Figure 1: “Restrained” Boundary Condition Within Test Furnace^x
National Institute of Standards and Technology (NIST) image



Figure 2: “Unrestrained” Boundary Condition Within Test Furnace^x
(NIST image)

The “restrained vs. unrestrained” paradigm (perhaps unintentionally) stipulates compatibility between the prescriptive design method and structural fire engineering by its procedural definition. However, such compatibility does not exist as reinforced by the new standards described above. As opposed to the binary “restrained” and “unrestrained” consideration of restraint, structural fire engineering inherently considers the degree and condition of restraint.^{xii} For instance, ASCE/SEI 7 Section E.2 states that the “level of restraint depends on the adjacent framing and connection details,” which are excluded from standard furnace testing. Further, Section CE.6 states that thermal restraint “may generate forces sufficient to cause yielding or fracture, depending on the temperature reached and the degree of restraint provided by the surrounding structural system to the thermally-induced actions.” Accordingly, a restrained condition may exhibit worse performance than a relatively

unrestrained condition with all else being equal (as has been demonstrated through testing^{xiii}); and restraint conditions encompass many more than two distinct scenarios.

In addition to ASCE/SEI 7, ASCE/SEI Manual of Practice No. 138 warns against the intermingling of the prescriptive design method and structural fire engineering to judge restraint conditions. For instance, Section 7.2.1 states that “designers should analyze the level of restraint from adjacent structural framing that would resist the thermal expansion of a heated assembly or subsystem and not extrapolate standard furnace test results to evaluate the restraint condition of a structural system.” Further, Section 2.2.1 states that “binary restraint classification may be difficult (or even paradoxical) for a designer to judge with relation to in-situ conditions considering the incompatible aspects of [the prescriptive design method] and structural fire engineering.” Most directly, the Manual states that “designers should not use standard fire test results for evaluating the restraint condition” of an assembly as part of a structural system.

Clearly, there exists a conflict between the boundary conditions and general limitations of standard furnace testing and the expectation for designers to judge in-situ restraint conditions. Hence, industry reform is needed to rectify the “restrained vs. unrestrained” paradigm. In the opinion of various subject matter experts^{xiv}, the current prescriptive provision in the U.S. permitting a lesser thickness of fireproofing for steel structures (or less concrete cover for concrete structures) for a “restrained” assembly should be abolished. Fundamentally, this paradigm conflicts with new structural fire engineering standards which prohibit the intermingling of the prescriptive design method and structural fire engineering, since there exists no correlation between assembly performance in a furnace test and in-situ structural system performance under actual fire exposure.

STRUCTURAL FIRE PROTECTION VARIANCES

IBC Section 703.3 permits the design of structural fire protection in accordance with long-standing prescriptive provisions or “alternative methods.” The latter is commonly referenced when a structural fire protection variance is requested in practice. Whereas prescriptive design provisions are clearly defined and simply applied, “alternative methods” of compliance remain effectively undefined in the IBC. Specifically, IBC 703.3(5) states that an alternative approach may be used; however, no specific requirements, guidance, nor bounds are provided. Consequently, structural fire protection variances that utilize this provision have historically exhibited a wide variation in engineering rigor and conservatism, with most tending toward less rigor/conservatism out of [convenience](#).^{xv} Also, some design professionals incorrectly reference IBC 703.3(4) as justification for the use of non-prescriptive approaches. For instance, a fire protection engineer may justify the removal of fireproofing from steel structures based solely on thermal response comparisons between a standard furnace test condition and anticipated in-situ fire conditions, without any appreciable structural analysis. Unfortunately, possible inherent defects or system vulnerabilities associated with this type of poor practice would not be readily uncovered since uncontrolled fire exposure rarely occurs and tests the true adequacy of structural fire protection.^{xvi}

Until recently, designers in the U.S. have had to independently decide what constitutes a satisfactory structural fire protection variance. ASCE/SEI 7 and ASCE/SEI MOP No. 138 address structural fire protection variances by compartmentalizing the prescriptive design method and structural fire engineering. Within the prescriptive design method, justification of code variances for structural fire protection must be conducted only within the context of the standard furnace test and its acceptance criteria and not with respect to postulations of in-situ thermal and/or structural performance. Hence, if a structural protection variance relies on an analysis of realistic fire exposures (e.g., Figure 3) (i.e., anything other than the standard furnace exposure) and excludes structural system analyses, the variance is invariably deficient with respect to new structural fire engineering standards.

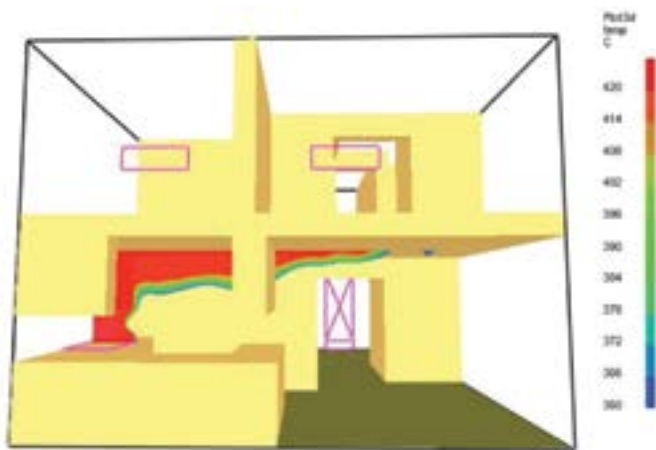


Figure 3: Fire Exposure Simulation (NIST image)

RETROSPECT

If the limitations and restrictions of the prescriptive design method inhibit the fulfillment of stakeholder design objectives, the only industry-endorsed alternative is structural fire engineering, as defined by the new standards described in this article.^{xviii} This design method requires a dramatically higher level of engineering rigor as compared to many structural fire protection variance approaches that have been employed in years preceding.^{xix} Encouragingly, building authorities now have tools to comprehensively evaluate structural fire protection [variances](#).^{xx} The removal of fire protection from structural systems should not be taken lightly, and it is now incumbent upon industry stakeholders to uphold the quality and consistency of structural fire protection variances moving forward. 🔥

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FIRE CODE REQUIREMENTS AND “INVENTORY”

What responsibility does the building owner and manager have to keep the sprinkler system working in compliance with building codes for the building life-cycle? What about the alarm system that notifies the occupants of fire or emergency? A building owner and manager keeps on top of these two key fire-and life-safety building systems because that is part of the facility managers' responsibilities.

What about maintaining the third and fourth elements of fire- and life-safety in buildings - the fire-resistance rated and smoke-resistant building elements and assemblies? What about the egress system and education of the egress system users? These elements are just as important as the sprinklers and detection/alarms.

For years, the fire codes - The International Fire Code (IFC), NFPA 1, *The Fire Code*, and NFPA 101, *The Life Safety Code* - have had very specific language about requiring the maintenance of effective compartmentation and structural fire-resistance to the level of protection that was in place when the building was originally constructed.

The International Fire Code and other fire codes dictate that there be documentation, i.e., records, that are accessible to the authority having jurisdiction (AHJ) for review that the fire-resistance has been maintained.

The documentation required for the building owner and manager to keep on top of the fire resistance maintenance in the structure is called an “Inventory”. The “Inventory” of fire-resistance-rated assemblies is a new term that’s in the 2018 International Fire Code.

In order to build the inventory of fire-resistance-rated and smoke-resistant assemblies, the building owner and manager really needs the list of “as-built systems” from the original construction or as restated by a registered design professional.

To build this inventory list correctly, the fire-resistance ratings need to be communicated through the construction documents, including the project manual and drawings, in the divisions as referenced in the CSI/CSC’s MasterFormat.

MAINTENANCE OF FIRE-RESISTANCE

Maintenance of fire-resistance is required by the fire codes - the International Fire Code, NFPA 1, *The Fire Code*, and NFPA 101, *The Life Safety Code*. NFPA 101, *The Life Safety Code* has a requirement in Chapter 4 for maintaining fire-resistance. (Note: The underline and italics are for emphasis only.)

4.6.12 Maintenance, Inspection, and Testing.

4.6.12.1 Whenever or wherever any device, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or any other feature is required for compliance with the provisions of this Code, such device, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or other feature shall thereafter be continuously maintained... in accordance with applicable NFPA requirements ...

[NFPA 101:4.6.12.1, emphasis added]

Clearly, continuous maintenance means something. It means that the building owner and manager has a responsibility to ensure that the fire-resistance is continuously maintained to protect people in buildings. This ensures safe ‘defend in place’ and/or egress strategies should they be required due to fire or smoke.

Then, NFPA 101 clearly directs the building owner and manager to have the fire-resistance inspected, maintained, and tested under the supervision of a responsible person at specified intervals. The specified intervals stated are in NFPA 80 and NFPA 105 for fire and smoke dampers and NFPA 80 for fire doors and fire-rated glazing.



Fire doors keep areas safe. DHI Photo

NFPA 221 has requirements for the assemblies. Maintenance direction is also found in other documents such as manufacturers' maintenance instructions for fire-resistance-rated assemblies, firestopping, fire dampers, fire-rated glazing, rolling and swinging fire doors.

NFPA 1 The Fire Code has very specific language speaking to the building owner in many ways. NFPA 1 directs the building owner and manager to maintain the fire-resistance integrity all the time - and to make sure it was installed correctly in the first place.

12.3.3.1 Required fire-resistive construction, including fire barriers, fire walls, exterior walls due to location on property, fire-resistive requirements based on type of construction, draftstop partitions, and roof coverings, shall be maintained and shall be properly repaired, restored, or replaced where damaged, altered, breached, penetrated, removed, or improperly installed.
[NFPA 1, 12.3.1, emphasis added]

NFPA 1 provides mandated inspection intervals for fire-resistance-rated assemblies. While it says to visually inspect every three years, the language above states that the fire-resistance ratings need to be maintained continuously.

12.3.3.3 Where readily accessible, required fire-resistance rated assemblies in high-rise buildings shall be visually inspected for integrity at least once every 3 years.
[NFPA 1, 12.3.2, 12.3.3, emphasis added]

This section below assigns more responsibility for training for those who inspect the fire-resistance-rated assemblies to the building owner. It means that they can't send just anyone to inspect their fire-resistance. The document requires people with technical knowledge and experience in fire-resistance-rated design AND construction be the ones conducting the inspections.

12.3.3.3.1 The person responsible for conducting the visual inspection shall demonstrate appropriate technical knowledge and experience in fire-resistance-rated design and construction acceptable to the AHJ.

In the section below, reporting and documentation is mentioned. The report is what the building owner and manager will show to the fire marshal who is inspecting for code compliance and the insurance company for risk reduction.

12.3.3.3.2 A written report prepared by the person responsible for conducting the visual inspection shall be submitted to the AHJ documenting the results of the visual inspection.
[NFPA 1, 12.3.3.1, 12.3.3.2, emphasis added]

The International Fire Code has language similar to NFPA 1 that mandates maintaining fire-resistance in buildings.

The 2015 International Fire Code states:

703.1 Maintenance. The required *fire-resistance rating* of **fire-resistance-rated construction**, including, but not limited to, walls, firestops, shaft

enclosures, partitions, *smoke barriers*, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistant joint systems, shall be maintained. Such elements shall be visually inspected by the owner annually and properly repaired, restored or replaced where damaged, altered, breached or penetrated. Records of inspections and repairs shall be maintained...

[2015 International Fire Code, 703.1, emphasis added]

Note that there needs to be a visual inspection performed annually on the fire-resistance-rated assemblies and the features of fire-resistance - firestopping, fire doors, fire dampers, fire-rated glazing. That's more frequent than is required by NFPA 1, *The Fire Code*. The underlined words in the 2015 International Fire Code are very similar to NFPA 1's Chapter 12's direction to the building owner.

It is also important to note that during the International Code Council's code development process for the 2018 version of the International Fire Code, there was a reorganization of Chapter 7, the Fire and Smoke Protection features section that was APPROVED.

The International Code Council's Fire Code Action Committee (FCAC) task group effort separated the fire-resistance section of the fire code into specific sections for each fire-resistance discipline. This separation brings attention to each individually and as part of a complete package to clarify the requirements for building owners and managers.

2018 International Fire Code

Section 701.1 and 701.2 of the new 2018 International Fire Code 701.1 and 701.2 says it well.

701.1 Scope. The provisions of this chapter shall govern the *inspection and maintenance of the materials, systems and assemblies used for structural fire resistance, fire-resistance-rated construction separation of adjacent spaces* and construction installed to resist the passage of smoke to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings. New buildings shall comply with the *International Building Code*.

[IFC 701.1 2018, emphasis added]

Then, section 701.2 describes the barriers and structural members to be protected.

701.2 Fire-Resistance-Rated Construction
Structural Members
Exterior Walls
Fire Walls, Fire Barriers, Fire Partitions
Horizontal Assemblies
Shaft Enclosures

The rest of section 701 - the charging language for the section - keeps the requirements originally stated in 703.1 of the 2015 edition and adds one important concept. It adds that there needs to be an **'inventory'** kept of the fire-resistance.

701.6 Owner's responsibility. The owner shall maintain an inventory of all required fire-resistance-rated and smoke-resistant construction, and the construction included in Sections 703 through 707



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and such construction shall be visually inspected by the owner annually and properly repaired, restored or replaced where damaged, altered, breached or penetrated.
[IFC 701.1 2018, emphasis added]

NOTE: The underlined text is the new additional language about the inventory of fire-resistance required that became part of the 2018 IFC.

REQUIREMENTS OF A FIRE-RESISTANCE "INVENTORY"

What are the required elements of an inventory of fire-resistance? The first requirement is the Life Safety Drawings. These drawings are required to know where the fire-resistance-rated horizontal assemblies and fire-resistance-rated or smoke-resistant walls are located. It can be assumed that the supporting construction for fire barriers, smoke barriers and fire-walls is also fire-resistance rated, meaning the structural protection must be maintained. That's the Sprayed Fire-Resistant Materials (SFRM), Intumescent Fire-Resistant



*SFRM's Maintenance Patching is required for continuous fire-resistance maintenance.
GCP Applied Technologies, Inc. Photo*

Materials (IFRM), wrap systems, wallboard enclosures, and horizontal assemblies.

These structural protection items need to be visually inspected and repaired or replaced when damaged, in addition to the required maintenance of barriers and their features of fire-resistance - firestops, fire dampers, fire-rated glazing, fire doors.

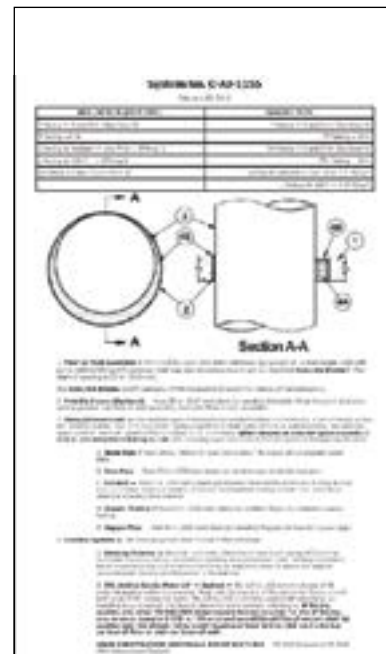


Life Safety Drawings. Koffel Image

The second inventory item is the listings and manufacturers' installation instructions. The listings refer to the designs selected from the UL Product iQ Fire-Resistance Directory, FM Approval Guide, or Intertek documents. For fire dampers, the listings are incorporated into the Manufacturers' installation instructions.



Manufacturers' installation instructions. Greenheck Image



UL Online Fire-Resistance Directory.UL Image

Listings like the UL listing depicted here for firestopping, fire-resistance-rated wall and floor assemblies, fire-rated glazing, fire dampers, and much more. Listings can be found at www.UL.com; www.ApprovalGuide.com; www.Intertek.com. For those in the Middle East, listings can be found at www.bell-wright.com in addition to the UL, FM and Intertek sites.

Manufacturers' installation instructions are required for the building owner and manager to understand the product properties, installation and maintenance instructions. To ensure a comprehensive inventory, the manufacturers' maintenance and repair instructions also need to be part of this second inventory item.

FIRE-RESISTANCE INVENTORY COMMUNICATION

The specifier needs to communicate fire-resistance inventory requirements through the construction documents. The inventory needs to be compiled by the general contractor, which is done by requiring that contractors use Division 1 -01-78-39, Project Record Documents, and the other related sections and then the complete inventory list is able to be and passed on to the building owner and manager when the building is turned over. This inventory sets up the maintenance activities that need to comply with the fire codes.

WHY IS FIRE-RESISTANCE MAINTENANCE IMPORTANT?

The safety record for buildings is directly related to the performance of fire-resistance, sprinkler, detection and alarm, and egress systems, as well as the education of the building occupants.

Fire-resistance, sprinklers, detection and alarms, and egress systems all need to work when called upon by fire. Holes can be made in the assemblies and fire-resistive material scraped off structural elements. Sprinkler or detection and alarm systems can be turned off. What happens when these systems are compromised? While sprinklers might extinguish fires, they are designed to control them and limit growth in one area. Should two areas have fire, and put demand on the system, what happens then? At this point, the fire-resistance becomes the primary defense. The building is now defending people in the place they are using fire-resistance features that make an egress system -- to protect them.

Thankfully, fires occur very infrequently in buildings. But when they do, we want everything to work. That's why the NFPA 1, The Fire Code, NFPA 101, the Life Safety Code, and the International Fire Code have a lot of direction to the Building Owner and Manager on the subject, and the message is clear: Maintain continuous fire-resistance. 🔥

Ben Urcavich is the 2019 FCIA Vice President and 2020 President Elect, and is the President of Performance Firestop, Inc. He can be reached at Ben@Performance-Firestop.com. Bill McHugh is FCIA Executive Director and can be reached at Bill@FCIA.org



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HOW TO CONSTRUCT A FIREPROOF CONTRACT: UNDERSTANDING THE DIFFERENCE BETWEEN FIRESTOP WARRANTIES AND GUARANTEES

In the last two decades and since its inception, the FCIA has promulgated codes and educated the industry on the need to improve safety through the proper 'DIIM' - 'Design and 'Installation, 'Inspection and 'Maintenance' - of firestopping materials that become systems after installation in accordance with the listing and manufacturers' installation instructions. The FCIA's efforts have resulted in key accomplishments in building and fire code development and specialty firestop contractor and special inspection agency accreditations, as well as better fire- and life-safety in buildings around the world.

Unfortunately, fires may still cause catastrophic loss of life and property damage. In 2017 alone, United States Fire Departments responded to an estimated 1,319,5000 fires resulting in 3,400 civilian fatalities; these fires also caused \$13 billion in direct property losses (excluding an additional \$10 million related to the California wildfires, in that year alone).²

Of note to the construction industry, the NFPA reports that each year between 2010 and 2014, municipal fire departments in the U.S. responded to an estimated average of 3,750 fires in structures under construction, 2,560 fires in structures undergoing major renovation, and 2,130 fires in structures being demolished.³ In structures under construction alone, five civilians lost their lives to fires and \$108 million dollars in direct property damages were caused.⁴

The insurance and legal appetite to ascribe blame and demand recompense for these losses, as well as those after the construction is substantially complete, has developed significantly over the last 20 years, thus making it is critical for any firestop manufacturer, designer, and / or firestop installation company, and special inspection agency to understand the liability arising out of firestopping.⁵ This article will address the key contractual provisions and distinctions between two sources of such liability: contractual warranties and guarantees.

WARRANTIES VS. GUARANTEES: KEY DIFFERENCES

Frequently, litigation and/or claims arising out of construction projects involve the interpretation of the parties' warranties or guarantees. Much confusion exists, however, even among industry practitioners, as to the key differences between the two terms. This article will briefly discuss these legal distinctions, particularly in the context of firestop systems.

Generally, a **warranty** addresses the standard of performance (regardless of an attribution of fault), while a **guarantee** is the obligation to return and fix defective work. A claim for breach of express warranty is based on the owner's contention that the contractor warranted a particular outcome, where said result was not achieved. In other words, a warranty clause addresses quality in general. A guarantee clause, on the other hand, specifically addresses defects that are discovered after the acceptance of the project (or any component thereof). As discussed in more detail below, the American Institute of Architects (AIA) Standard A201-2017 (A201-2017) Owner-Contractor contract includes both such warranty and guarantee provisions.⁶

WARRANTIES

Subparagraph 3.5.1 of A201-2017 agreement contains three types of warranties: (1) that the materials and equipment will be of good quality and will be new unless otherwise specified; (2) that the work will be free from defects not inherent in the quality required or permitted; and (3) that the work will conform to the requirements of the Contract Documents. Each of these warranties may apply to a general contractor or subcontractor's work.⁷

If the parties contract to build a project (and subcontractors on the job are subject to flow-down provisions, including this form of AIA agreement to install the firestop system), this first warranty thereunder deals only with materials and equipment, not workmanship. When the project specifications do not mandate installation of a particular component, system, or product, an owner may claim a breach of warranty if the system installed does not meet the owner's expected or anticipated standards – for example, if the installed firestopping system failed to perform as specified.

Alternatively, even if the specifications require the use of a particular brand of materials, the contractor/installer still “warrants” that the system will meet the performance criteria. If the materials fail to meet the performance specifications due to no fault of the contractor, the contractor may still be held liable for breach of warranty arising from the materials’ inadequate performance. However, the precept that a contractor could be required by the owner to install a particular brand of materials and then be held responsible for its failure has met with judicial hostility. In any such lawsuit, one or more parties will likely pursue contribution actions against the engineering design firm.

The second form of warranty deals directly with defects in the materials which are not “inherent in the quality required or permitted.” In this situation, the contractor is NOT liable to an owner who selects a particular brand of material, which, while not inherently flawed, is inappropriate or “unsuitable” for the intended application. If the materials are defective, however, regardless of the context in which they are to be used, the contractor CAN be held to have breached this second warranty.⁸

The third warranty addresses the workmanship of the installation of the system itself. These warranties most frequently come into play if particular performance standards were designated, either as to labor or as to material, and there has been a failure to comply with the standards. It is important to note that because the A201-2017 agreement does not designate any time limitation by which such warranty claims must be brought, the contractor should consider negotiating an accelerated or limited period by which such claims must be asserted. Otherwise, statutory limitations periods will apply, and they not only vary from state to state, but can also be tolled in certain circumstances until “discovery” of the breach of warranty or discovery of the system failure.

Warranties are also addressed in the Uniform Commercial Code (the “U.C.C.”), which applies to actual manufactured materials sold to an owner. The Uniform Commercial Code has been adopted in its entirety by many states, but these claims must be reviewed under the governing law provisions of the construction contract.

Ordinarily, a manufacturer or supplier of such goods will only be potentially exposed to express warranty claims. But according to the U.C.C., an express warranty may be created by affirmation of a fact, a promise made, a description of the goods, or by providing a sample of the goods, any or all of

which becomes a basis for the bargain.⁹ Additionally, an express warranty need not be in writing; such warranties may be implied or may arise if the manufacturer knew that the material would be unsuitable.¹⁰

Nonetheless, if a contractor can establish that it followed the owner's detailed design specifications, it will not be held responsible for the failure to achieve a particular result in the absence of having expressly warranted otherwise. While a supplier or manufacturer may be held liable for providing defective materials, it is unlikely, without other conduct, such as a failure to warn of known concerns, that it will be held to have breached an express warranty for supplying merely “unsuitable” products which were ordered and/or specified.

In addition to these breach of warranty claims, common law claims for fraudulent representations or warranties may also be asserted. Such claims vary from state to state but must be pled with specificity as to the knowing misrepresentation of the warranty that was provided.

GUARANTEES

Paragraph 12.2 of the AIA A201-2017 agreement addresses guarantees, under the heading “Correction of Work.” A guarantee clause concerns workmanship and provides that the contractor will be responsible for returning to fix any defects that arise, either during the course of the project or after substantial completion. A notable difference between a guarantee and an unlimited warranty as to the quality and nature of the work or the system, as set forth in Clause 12.2.2, is that guarantees are typically limited to one-year after substantial completion of the project or from the completion of the contractor’s work, if performed after substantial completion.

One reason that owners request guarantee clauses is to avoid situations where the contractor claims the cause of a defect is an alleged faulty design versus the owner/architect's claims that the work was done improperly. The agreement mandates a contractor fix any defects so that the owner is not forced to litigate the issues to determine who was at fault but can instead immediately demand a fix of the problems without first establishing an attribution of fault. The owner is, however, required to provide prompt written notice of any discovered defect. Also important is the fact that if the owner fails to properly notify the contractor of the defect within the one-year period for corrections (or any other period negotiated and fixed in the parties’ contract), the owner waives his right to require correction by the contractor.

CONCLUSION

Firestop installation contractors must understand the difference between warranties and guarantees and govern their conduct accordingly. Both types of clauses may subject parties on a failed project to liability. Before executing any contract including warranties and guarantees, you should seek legal review so that your business does not go down in flames along with the project. 🔥

Karen P. Layng is the founder and President of a national construction and manufacturing consulting and real estate development company: <https://www.mait-co.com/>. She has over thirty years of experience as a construction industry leader, including as a shareholder and head of the Construction and Litigation practices of Vedder Price, as CSO and General Counsel of a national mechanical company, and is a licensed AAA arbitrator. She can be reached at kplayng@mait-co.com.

REFERENCES:

- 1 Karen P. Layng the founder and president of M.A.I.T. Co., a consulting and legal firm. The article's footnotes, specific case citations, and references, as well as reprint permission, can be obtained from Ms. Layng at kplayng@mait-co.com.
- 2 See "Fire Loss in the United States During 2017," dated October 2018, published by the NFPA.
- 3 NFPA Research, Data, & Analytics- REV www.nfpa.org/research; research@nfpa.org.
- 4 *Id.*
- 5 Online sources now promise to match clients (and boast that they have matched over 4 million clients already) who have suffered damages arising from a fire accident with the "right lawyer for your case in minutes." (See ex. "LegalMatch" at <https://www.legalmatch.com/law-library/article/fire-accident-lawyers.html>.)

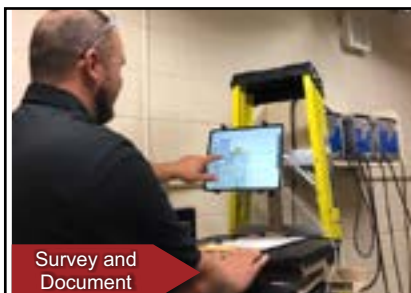
6 See American Institute of Architects Document A201-2017, *General Conditions of the Contract for Construction* (hereinafter A201 - 2017), New York, NY, 2017.

7 *Id.*

8 It is noteworthy that in many courts, privity is still required (or a direct contractual relationship) for a party to recover damages for breach of express or implied warranties from the seller of an allegedly defective specified system. (See for example, *Erie Insurance Company v. Amazon.com, Inc., et al.*, 4th Cir. Court of Appeals, No. 18-1198 (May 22, 2019) where the appellate court found that Amazon was not the seller of the defective headlamp whose batteries failed and ignited the house on fire. Amazon was not found to be a traditional "seller" as it sold the lamp solely through its fulfillment center on behalf of the actual seller, or Dream Light).

9 See, U.C.C. Section 2-313. "Express Warranties by Affirmation, Promise, Description, Sample."

10 *Id.* at 2-313 (2).



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In addition, the OSHA 300 logs are documents that are typically requested during an OSHA inspection. Fail to have the logs completed, and you could be opening yourself to additional citations and fines. But now there's another reason to keep accurate OSHA logs, stressing the word ACCURATE.....OSHA is reviving the Site-Specific Targeting Program (SST).

In an agency press release on October 16, 2018, OSHA announced it will be using the initial set of data collected from its electronic recordkeeping rule to identify workplaces with high injury and illness rates. The SST program directs OSHA enforcement resources to "high injury rate establishments" based on 2016 data from submitted Form 300A, as well as those establishments who failed to submit any data at all (Safety&Health, 2018).

This is not a new program, by any means. It's just one that OSHA is now adding back into the lineup. Intended to be an annual program, SST was discontinued in 2014 after OSHA wound down its Data Initiative. The initiative, which started in 1995, was a collection of injury and illness data from approximately 80,000 organizations in "selected high-hazard industries" (Safety & Health, 2018).

However, in 2016, the OSHA Improve Tracking of Workplace Injuries and Illnesses final rule required establishments with 250 or more employees and those with 20 to 249 employees in certain high hazard industries - including construction and firestop contracting companies - to electronically to submit data from Forms 300, 300A, and 301 (Safety&Health, 2018).

Although OSHA has recently proposed rolling back the rule to require only the Form 300 A, the data on all 3 forms collected in 2016 is available for their use. Construction sites are typically exempt from this program, OSHA does include contractor companies with injury rates they feel exceed the industry.

It's not uncommon for employers to "over-report" on their OSHA 300 logs; that is, to put every single injury that takes place in their organization, even if all of those injuries DO NOT meet the definition of an "OSHA recordable injury". The problem with doing this now is that OSHA will be using over-reporting against you. That is why it is so important that OSHA 300 and 300A forms are filled out properly and accurately. It's a good idea to always have your safety director review your OSHA 300 and 300A logs before they are submitted.

As a reminder, OSHA 300A forms need to be completed and posted in your workplace on February 1, 2020 and electronically submitted on March 2, 2020. 🔥

Frank Marino is a Partner at Safety Check, Inc. He received his Bachelor of Science Degree from Illinois State University where he majored in Occupational Safety. He earned the professional designation of Certified Safety Professional (CSP) and has also achieved the status of Qualified Person in Fall Protection, Scaffolding, and Excavation. Frank is a current member of the American Society of Safety Professionals. He can be reached at fmarino@safetycheckinc.com.

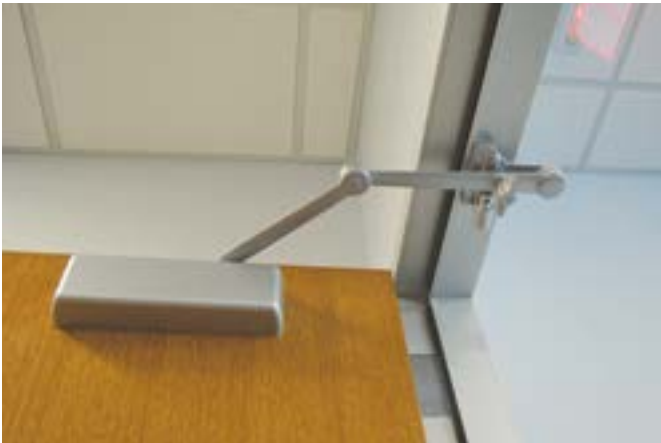
REFERENCES:

Safety & Health Magazine, December 2018

CONTROL THE DOOR

Installed at the top of the door and frame, door closers are purposely designed to not attract attention. An appropriate door closer, adjusted properly, will add to the safety of the building and the smooth operation of the door, both day-to-day and during an emergency.

Today's door closers are not only functional, but also add aesthetic value to a myriad of commercial applications. Closer bodies have been redesigned to be sleeker and take up less space on the surface of the door or frame. They are meant to be inconspicuous, matching the style of their wood or metal environment. While they have been designed to blend in, door closers are an important piece of hardware that cannot be overlooked during the specification process.



Hager Companies image.

It is important to select the right make and model for the door-opening conditions when specifying a door closer. Heavy duty surface mount closers made of cast iron or aluminum alloy are ideal for any high foot-traffic door application over a wide-range of temperatures. This includes entry doors, bathroom doors, or almost any door in commercial applications, including schools, medical facilities, office buildings, and hospitality buildings.

Concealed closers are also available, which allow an almost "invisible" control over the door. Special templates are cut into the door and/or frame where the closer body will be installed, typically resulting in only the arm of the closer being visible, extending from the door to the frame when the door is in the open position. Concealed closers have similar features as standard closers and are an excellent choice for some projects. Due to certain limitations that apply when using concealed closers with fire doors, it must be verified with the door manufacturer that the fire door has been tested and approved with concealed closers.

Circumstances can develop when the door closer no longer completely closes and latches the door, and this can be an issue for life-safety. The problem can develop when the building environment has changed, with the typical cause of failure being the HVAC system. For example, winter has arrived, and the heat is running almost constantly. Now, the door closer can no longer overcome the higher air pressure in the building, so adjustments will be required. Adjustments to the spring power and/or hydraulics in the closer will allow it to properly perform its function again.

Closer adjustments are accomplished through the passage of fluid through various chambers of the closer, creating pressure on the piston, and as such, great care must be taken to measure the fluid to exacting standards, while staking the external ports to limit their movement and provide leak-free performance. If the closer is going to be installed in extreme heat or cold, it is also important to verify that its hydraulic fluid is rated for the anticipated ambient temperature.

A door closer, this innocuous piece of hardware, can literally save the day if there is a fire. NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, requires that fire doors be self-closing and self-latching to contain and control a fire from spreading from one room to the next. Because fire and water from sprinklers or fire hoses tends to ruin electronic equipment, positive closing and latching must be accomplished by mechanical means, i.e. a door closer.

The Americans with Disabilities Act (ADA) identifies specific criteria for door closer compliance. Written into law in 1990, the ADA prohibits discrimination against individuals with disabilities. The law not only covers equal employment and services, but also includes access to buildings as well. Strict guidelines govern door hardware to ensure it doesn't present a barrier to access for individuals with disabilities.

For example, thresholds must be less than ½" (12.7mm) tall, and hallways and doorways must have a clear width of at least 32" (812.8mm) to allow wheelchair access. Door closers must allow for minimum effort to meet the ADA requirement of five pounds of force to open a door for interior non-fire-rated doors.

Adjustable closers have internal springs, modifiable via external ports, that allow adjustment in the pressure required to open a door. For closers, the ADA also requires the closing speed of a door be adjusted so that from a 90-degree open position, the time required for the door to close to a 12-degree open position be no less than 5 seconds to give individuals with mobility issues time to make their way through the door. Latching and sweep speed ports are typically standard on door closers; back check and delayed action options are often available, too.

A door opening in a high-wind area might be another condition in which a door closer may be helpful. High-speed wind can grab a door and wrench it open, destroying the hinges, the door, the door frame, the wall – posing an obvious safety hazard.

A heavy-duty door closer with a built-in stop in the closer arm, or a separate overhead stop, can resist the wind and protect the hinges, frame, and surrounding surfaces. Many closer manufacturers provide installation plates and templates that allow concurrent installation of an overhead stop with a door closer. These are recommended in high-wind or high-traffic openings.



*Wilmington Overhead with closer install.
Hager Companies image.*

stop-and-hold-open functions. It is important to note that any closer or overhead stop with a manual hold-open function is not appropriate for a fire door, as it would interfere with the door being self- or automatic-closing in case of emergency. Electro-magnetic door holders are available, which can be tied to the fire alarm system and will release the door if the fire alarm is activated. As specified by the Architect or preferred by the end user, overhead holders and stops may also be used in conjunction with a closer – such as in high-wind areas, as mentioned earlier.



Hager Companies image.

There are many options to choose from when selecting a door closer. Closer arms can be specified with varying characteristics, such as heavy-duty, hold-open, and cushion stop. Choosing the right function closer and options for the opening is an important code consideration and can be a source of confusion for inexperienced specifiers. As this is an important part of fire code, life-safety, and ADA compliance, be sure to consult with an expert when specifying door closers for construction projects in new or existing buildings. In addition, selecting the appropriate door closer for the required functionality will prolong the life of the closer and enhance the user experience based on the environment and application specifics.

Another adjustable feature of many door closers is that it is possible to install them as a “top jamb mount”, where the closer body is attached to the frame of the door and the regular arm mount is attached to the push-side of the door.

An alternate method of door control is an overhead holder/stop. These devices are fluid-free, and, while they do not offer the adjustable back check of a closer, they typically provide varying degrees of compression prior to dead stop. They can be surface or concealed mounted and may offer stop or

Door closers walk a fine line between ADA requirements and fire codes. NFPA 80 does not address the amount of force required to open a door, but it does require that all swinging doors be closed and latched.

In general, life-safety takes precedence over the “five pounds of force” rule, although it can seem like every installation is different. For final authority – the final approval – on openings such as fire doors, it may be necessary to seek out the local Authority Having Jurisdiction (AHJ) over the project.

While it can be easy to take the “cut and paste” approach when you reach that section of the door hardware schedule, where matters of life-safety are concerned, it is critical to specify the right make and model for the door-opening conditions. 🔥

Vince Butler is a Product Manager for Hager Companies.
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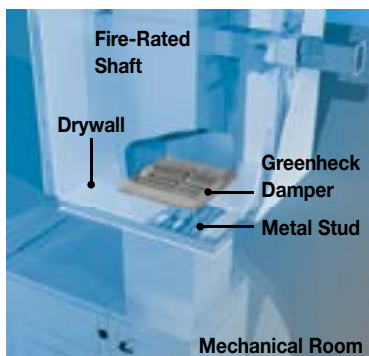


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CODES AND STANDARDS NEWS

NBCC PROCESS FINISHING

The National Building Code of Canada code development process for the 2020 codes is wrapping up. FCIA submitted proposals to mandate the FM 4991 Approved or ULC Qualified Firestop Contractor Programs, Special Inspection of firestopping to ASTM E 2174 and ASTM E 2393 Inspection Standards, and an annual visual inspection of fire-resistance, in addition to a proposal to make

the word firestop one word in the code.

FCIA was successful in having the Standing Committee on Fire Protection refer the FM and ULC Programs and Inspection Standards to the NBC Executive Committee to build a new objective for inspection and installation. Watch for more on this in the next code cycle.

FCIA AT ICC'S PUBLIC COMMENT HEARINGS

The International Code Council's 2021 Code Development Cycle is wrapping up with the Online Governmental Consensus Vote happening in December. The structural and administrative sections of the IBC, Energy Code, and others were debated in Las Vegas in October.

NEW ASTM WORK ITEM

FCIA & Labeling - FCIA's Recommended Professional Practice for Identification of Firestop Systems (Labeling) has had great success since its launch. FCIA's Standards Committee wants to take it one step further and build an ASTM Standard for identification systems. Watch for more as FCIA's 2019 Board President, Jay McGuire, chairs this effort at ASTM.

NEW ASTM FIRESTOP GUIDE

ASTM recently released its new ASTM E 3157, *Standard Guide for Understanding and Using Information Related to Installation of Firestop Systems*. FCIA's recommendations for FCIA Members and others is to exclude the 'ASTM Guide' from their proposals. There are statements in the guide that are not stated in the manufacturers' installation instructions as limitations, hence the recommendation from FCIA. Need to know more? Email info@fcia.org for FCIA's position statement. 🔥

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INDUSTRY NEWS

FCIA CELEBRATES 20 YEARS

This November, FCIA celebrated 20 Years at the FCIA Firestop Industry Conference and Trade Show - FIC '19. The event, held in Miami, FL, welcomed the group's highest attendance ever and was a huge success. While there, attendees were treated to a dynamic week of events highlighting the exciting milestone, education for the firestop industry, the industry's only firestop and effective

compartmentation focused trade show, and more. The celebration continued at the FCIA 20th Anniversary Awards Dinner where the Association recognized a multitude of integral players in the Association's 20 years, and culminated in an evening full of surprises, including stand-up comic Greg Hahn and a private fireworks show!



FCIA AT FALL TRADE SHOWS

From its outset, FCIA's Marketing Committee and Board has directed FCIA to "get the word out about the firestop industry and the importance of the specialty firestop contractor". This includes continuing to find ways to provide exposure for FCIA Members. And get exposure they did! FCIA could be found, either attending or exhibiting, at all the major trade

shows and industry events this fall - meeting interested parties, answering questions, making connections for the membership. FCIA's Info@FCIA.org business cards were handed out to hundreds from around North America, and emails, phone calls, and outreach for work to FCIA Members have already started.

CONSTRUCT SHOW IN DC

The Construction Specifications Institute (CSI) was one of the first trade shows FCIA ever attended. We made an impact then, just as we did at this year's

show. Great visits from specifier friends from the USA and Canada took place at this show in the DC area.

SFPE'S ANNUAL CONFERENCE

The FCIA attended the Society of Fire Protection Engineers (SFPE) Show in Phoenix, attending conference sessions and

the yearly leadership luncheon. FCIA is glad to be invited to be part of this key group's celebration.

IFMA MEETS IN PHOENIX

The International Facility Managers Association (IFMA) World Workplace Conference & Expo brought many facility management and building personnel to Phoenix for the three-day event. FCIA's booth was well-attended - and well-managed. Special thanks to Marketing Committee Members

Ben Urcavich (Performance Firestop, Inc.) and Taylor Benay (Northeast Firestopping Solutions) and FCIA Director Tracy Smith (Southwest Firestop) for working FCIA's Booth and representing FCIA's membership.

ICC FINISHES CODE DEVELOPMENT, EXPO A BIG SUCCESS

The International Code Council's Building Safety & Design Expo and Public Comment Hearings took place this October in Las Vegas. Thanks to Marketing Committee Members Taylor Benay (Northeast Firestop Solutions) and Lauren Sustek (Bartkowski Life Safety Services) for working the FCIA exhibit booth at the two-day expo.

The Public Comment Hearings covered the Administrative and Structural Codes and Energy Code over a week's time. Although the industry has come a long way in the codes, there is still much to do. The next code development cycle starts January 2021. Look for FCIA to be present and active in the process, always advocating for the industry, the firestop contractor, and improved fire- and life-safety in buildings around the world.

INSURANCE INDUSTRY & FIRESTOPPING

FCIA's leadership has been meeting with key insurance industry organizations and making headway. Look for an

announcement in 2020 about a new development that will help highlight the importance of fire-resistance in buildings.

FCIA MEETS WITH FM APPROVALS

FCIA's Accreditation Committee Chairs, Ben Urcavich (Performance Firestop, Inc.) and Tyler Ferguson (Northeast Firestopping Solutions), along with FCIA Executive Director Bill McHugh, met with the FM Approvals' FM 4991 Team this November to discuss the FM 4991 Approved program.

We appreciate the relationship we have with FM Approvals, and we always have great dialogue about ways to keep the program valuable. With a recent change in leadership for the program due to the retirement of Jeff Gould, Jill Norcott and the FM Management Team is looking to the future with new energy for the accreditation program.



FM APPROVALS JEFF GOULD RETIRES

As the author of the FM 4991, Standard for the Approval of Firestop Contractors, Jeff Gould (FM Approvals) collaborated with Blase Reardon, Aedan Gleeson, Bill McHugh, and Don Murphy on the development of the program, launched

November 2000. Because of Jeff's contributions to the industry and his commitment to FM 4991 Approved program, he was recognized with the FCIA Honorary Membership Award at FCIA's Firestop Industry Conference & Trade Show this November. Thank you, Jeff. Enjoy retirement!



UL'S RICH WALKE RETIRES

After a career at UL that brought him a 'Distinguished Member of Technical Staff' recognition, a level awarded only a few hundred employees, Rich Walke will hang up his fire testing and regulatory services hat this November 30. As a recognition of his career and his

career's dedication to the fire-resistance-rated and smoke-resistance-rated industry, FCIA was pleased to award him FCIA's Honorary Membership Award this November 7. Many thanks to Rich for his partnership throughout the years, and best wishes for a relaxing retirement. We look forward to working with others at UL on various projects in the future.

FCIA MONTREAL SYMPOSIUM

Over 80 AHJ's, Specifiers, and FCIA Contractors, Special Inspection Agency, and Manufacturer Members were present in Montreal, Quebec this September for the FCIA Firestop & Effective Compartmentation Symposium Canada. The event focuses on the firestop and effective compartmentation industry in Canada and the National Building Code of Canada code requirements for firestopping. With dual screens, one in French and one in English, participants were able to read slides in their native language. Stay tuned to [FCIA.org](https://www.fcia.org) for information on 2020's FCIA Symposium in Canada. 🔥



BRIGHT IDEAS

INPRO F140 FIRE BARRIER PRODUCT AWARDED TOP PRODUCT OF 2019 AWARD

This November, Building Design+Construction magazine recognized Inpro's F140 Fire Barrier as a Top Product of 2019. The F140 was recognized for its innovative design, requiring no mechanical fastening, which speeds installation in the field via a patented spring system, providing consistent outward pressure to hold the barrier in place.

To learn more, visit www.inpro.com.



REAL-TIME SOFTWARE CHANGING THE GAME

The BORIS software has gone from strength to strength and is being utilized by Firestop Contractors & Risk Assessors worldwide, as well as by Utility, NHS, Health & Safety, Estates, Lighting, Fire & Security, and Diamond Drilling trade contractors and professionals. Some of the features and benefits are: Complete Live Real-Time Software; Live Real-Time Reporting; Date Range Functionality; Digital Photos with GPS Location Tagging; Real-time Price Engine; Real-time Productivity Reports; Full Operational and H&S Capabilities; Document Storage; Job Sheet Creation Software; Health & Risk Assessment Audit Software; Annotate and Plot Drawings; Labor and Staff Planning; and more. To learn how this can work for your business, watch the video online at <https://vimeo.com/105004268>.



FCIA INDUSTRY CALENDAR

JANUARY

JANUARY 19-21

Intersec
Dubai, UAE
www.intersecexpo.com

FEBRUARY

February 3-7

World of Concrete
Las Vegas, NV
www.worldofconcrete.com

February 18-20 (tentative)

FCIA FSB Firestop & Effective
Compartmentation 'DIIM' Symposium
and FM/UL Testing
Doha, Qatar
www.fcia.org

February 23-25 (tentative)

FCIA IBC Firestop & Effective
Compartmentation 'DIIM' Symposium
and FM/UL Testing
Dubai, UAE
www.fcia.org

February 27-29

Fire & Security India Expo
Greater Noida, India
www.fsie.in

MARCH

March 9-12

Association of General Contractors
Annual Convention
Las Vegas, NV
www.AGC.org

March 22-25

ASHE Planning Design & Construction
Summit and Exhibition
San Antonio, TX
www.ASHE.org

March 22-26

AWCI Annual Convention & INTEX Expo
Las Vegas, NV
www.AWCI.org

APRIL

April 6-9

Building Innovation 2020 Conference
& Expo
Arlington, VA
www.buildinginnovation.org

April 13-17

NFCA Annual Conference & CAP
Training
Austin, TX
www.nfca-online.org

April 14-16

International Facility Managers
Association (IFMA) Facility Fusion
San Francisco, CA
www.facilityfusion.ifma.org

MAY

May 11-14

FCIA ECA '20 - Education and
Committee Action Conference
Kansas City, MO
www.fcia.org

May 14-16

AIA Conference on Architecture
Los Angeles, CA
www.conferenceonarchitecture.com

May 20-24

Construction Specifications Canada
Conference
Montreal, QC
www.CSC-DCC.ca

JUNE

June 3-7

RAIC 2020 Conference on Architecture
Edmonton, AB
www.raic.org

June 15-18

NFPA Conference & Expo
Orlando, FL
www.NFPA.org

June 27-30

BOMA International Conference & Expo
Philadelphia, PA
www.BOMA.org

JULY

July 27-29

NASFM Annual Conference
Stowe, VT
www.firemarshals.org
Cleveland, OH
www.DHI.org

AUGUST

August 1-3

APPA Annual Conference and
Exhibition
Boston, MA
www.appa.org

August 2-5

ASHE Annual Conference and Technical
Exhibition
Chicago, IL
www.ASHE.org

SEPTEMBER

September 20-22

Canadian Healthcare Engineering
Society (CHES) Annual Conference
Halifax, NS
www.ches.org

September 23-25

FCIA 'DIIM' Symposium Canada
Halifax, NS
www.fcia.org

September 30-October 2

CSI CONSTRUCT Expo
Grapevine, TX
www.constructshow.com

September 30-October 2

International Facility Managers
Association (IFMA) World Workplace
Chicago, IL
www.worldworkplace.ifma.org

OCTOBER

October 11-12

ICC Annual Conference and Building
Safety & Design Expo
St. Louis, MO
www.ICCSAFE.org

NOVEMBER

November 10-13

FCIA FIC '20 - Firestop Industry
Conference & Trade Show
San Diego, CA
www.fcia.org

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