

Life Safety Issues: *Firestopping*

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The most important issue in the design and construction of the built environment are Life and Safety Issues. Current building codes are written and enforced to protect and save lives.

As an industry, both in design and construction, art and science we need to be ever so vigilant in protecting life.

As estimators and construction managers, where we are consistently tasked with delivering a quality product on a challenging budget, codes should never be taken lightly and compromise never a consideration. In these difficult economic times we often question how our competitors can possibly deliver everything per plans and specs for their quoted price. We rarely know the answer to that question. I'm not sure how they do it, but what every general contractor, sub-contractor and design professional ought to know is that the responsibility for design and installation deficiencies rests squarely on the construction professional regardless of government inspection, review and approval.

Building fires and fire deaths occur daily in the United States. Designers and contractors need to be aware of their potential liabilities, if life safety issues are not properly provided. If a contractor fails to install a product according to the manufacturer's specifications, the contractor and sub-contractor could face significant liability for both property damage and personal injury.

There is legal precedent. Building professionals and ALL contractors should study the applicable building codes and be certain to include all requisite firestop measures. Past legal cases tell us that a contractor's violation of building code requirements WILL lead to liability in the event of fire damages. Recent legal history also says that relying on building official(s) or the fire marshal's oversight and approval for compliance is misplaced. Therefore,

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building professionals should carefully perform and inspect their work to comply with all known codes and regulations.

While we cannot prevent all building fires, fire safe building measures should minimize loss of life and property damage. The greatest risk to occupants and the leading killer in fires is smoke and toxic gases. While fire protection systems provide suppression, they do little to prevent the migration of smoke. Fire alarm systems provide detection but they are not truly effective unless the people smell smoke or are told to exit. Most people ignore fire alarms or walk around and ask what is that? Smoke can travel 120 to over 400 feet in a minute and most fire deaths occur away from the fire's room or origin. Nearly three quarters of all fire deaths are caused by smoke inhalation. Most survivors caught in a fire could not see further than 12 feet in front of them. Therefore containing smoke & gas is critical in fire protection and life protection.

Areas that allow fire and smoke to spread are unsealed floor & wall joints, unsealed pipe and duct penetrations, unsealed cable penetrations and doors and windows. By containing the fire and the smoke and the gases to the room or origin for enough time, you give the occupants precious minutes to exit, and the firefighters time to do the job they do so well. The IBC, International Building Code is one document that most states have adopted, providing consistency in how firestop issues should be addressed.

Compartmentalization is a commonly applied principle for fire safety. It is restricted by dividing a building into separate compartments with fire resistive walls and floors, increasing the odds for adequate escape routes. The components in fire rated compartments are fire-rated assemblies, fire-rated doors, air ducts with fire dampers and firestop systems.

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Firestopping then involves providing a measure of fire containment to the walls and floors that include all joints, gaps or penetrations made during construction, both vertical and horizontal in rated building systems.

Firestop Systems are single materials or a combination of materials used to create a firestop assembly capable of limiting the spread of heat, fire, gases or smoke through the opening in a wall or floor. Firestop products do not have fire ratings. Only firestop systems get fire ratings.

Smoke Partition is an assembly with no rating designed to resist the passage of smoke.

Smoke Barrier has a 1 hour fire resistance rating also designed to resist the passage of smoke.

Fire Wall is a fire-rated partition that runs continuous from foundation up to or through the roof. Fire walls have structural stability to allow collapse of building on either side without the wall collapsing. Fire Barrier is a vertical or horizontal assembly that restricts the spread of fire. Barriers go from floor to underside of the structure above, continuous through concealed spaces, intermediate fire blocking as required.

Fire Partition(s) are a vertical assembly that has a fire resistance rating. Partitions go to the underside of the structure above.

In existing buildings, you can identify fire rated walls by the walls that may be thicker, where concrete block construction is used in non load bearing conditions. Also you can verify fire walls by any wire glass in the wall or by looking for the door plates on the buck side of doors.

As construction estimators our challenges have always been to identify, quantify and qualify all building pieces and parts, components and assemblies. To do so within an acceptable range of magnitude at the level of the estimate requires education and experience. Learning to accurately price Firestopping systems can be as complex as pricing the various interior partitions found on the partition schedule.

Firestopping systems have many factors that affect performance and pricing. Variables include size and type of penetrating item(s), size and shape of opening(s), size of annular spaces, floor and wall types, ratings and thicknesses. An accurate quantity per type of system is always important but location, access difficulty and distance off the floor can greatly affect labor productions.

If you are uncomfortable in quantifying and pricing firestopping systems, seek the help of a Qualified Specialty Contractor. Firestop Contractors are Specialty Contractors that are knowledgeable in the selection and install of firestop systems to meet code, Architectural, Owner and Insurance specifications and requirements.

UL, Underwriters Laboratories, Inc. has a Qualified Contractor Program. The UL Qualified Contractor Program assesses installation contractor firms that install fire resistance materials and systems. Firestop and Spray-Applied Fire Resistive Material (SFRM) contractors can differentiate themselves in the marketplace through this third party assessment. UL has been classifying firestop and SFRMs for many years now.

One suggestion is to enlist the assistance of a Firestop Contractor if the planned facility has a 24 hour use, such as a facility that has a bed in it; Medical, Skilled Nursing, Hotel, Student Housing, Assisted living Facility etc.

A single source Firestop Contractor is always a preferred method of delivery for consistency and single source responsibility. One contractor can take care of all firestop assemblies for Drywall, Glass & Glazing, Plumbing, HVAC, Fire Sprinklers, Electrical and Low Voltage requirements.

We all need continuing education on life safety issues. As a building professional do not underestimate the importance of your due diligence in addressing such matters of detail.

Do not neglect! The health and well being of your business and livelihood may very well be at risk.