FIRESTOPPING

Firestopping consists of the proper use and installation of tested and rated systems that are designed to limit the passage of flame, heat, smoke, and/or toxic gases during a fire. Similar to fire walls, smoke barriers, and other rated assemblies, firestopping contributes to containment. In many applications, it is intended to maintain the integrity of fire-rated assemblies such as penetrations through rated floors and walls, joints between rated assemblies, and perimeter systems between floors and curtain wall assembles. Firestopping is a key component of passive fire protection systems. There are numerous instances where fire and smoke were able to spread due to missing or damaged firestopping, and the potential liability implications are obvious.

The variations in tested firestopping systems are extensive. Piping penetrations can be metallic or plastic such as PVC – each of which would obviously react much differently in a fire event. If the penetrations are data or power cables, systems may need to be selected that allow for easy modifications as information technologies for many facilities are frequently changing. Many joints must allow for normal building movement while still retaining their fire-resistive ratings. Perimeter systems often need to be customized for the architectural characteristics of the curtain wall.

A significant change regarding firestopping is that the 2012 edition of the International building Code (IBC) now requires Special Inspections of firestopping in certain structures. The new requirement applies to all high-rise buildings and all Risk Category III and IV buildings such as most schools, emergency services facilities, hospitals, and public assembly buildings with an occupant load greater than 300.

Firestopping in some form has always been required by the IBC (addressed in detail in the chapter on "Fire and Smoke Protection Features"). In the past, most inspections of the proper installation of firestopping systems were typically accomplished by building inspectors working for code officials. The 2012 change now requires that proper installation be confirmed by an approved, independent inspection agency through the Special Inspections process. The inspection agency must provide interim and final reports to building officials, the project's designers, and the general contractor.

The systems developed to meet the various requirements are typically a combination of proprietary products and accessories installed in a prescribed manner. Firestopping components can consist of compressed packing material such as mineral wool with elastomeric, fire-resistive sealants; while others use expanding, heat-activated tapes or putties – often in conjunction with manufactured collars or other appliances. To receive a rating, a system is rigorously tested in actual fire situations by specialized testing laboratories such as Underwriters Laboratories, Intertek, or FM Global. At the end of testing, each approved system can be assigned up to 3 primary ratings:

F Rating:	The time that the system remains intact and does not permit the spread of fire.
L Rating:	The amount of air or smoke leakage through a joint or penetration.
T Rating:	The amount of time a firestop system prevents the temperature on the non-fire side from rising 325° F above the ambient temperature.

Based on the IBC or other requirements, the architect or a fire protection engineer can specify the minimum levels of applicable ratings or specify specific systems that meet a project's needs.

The goal during constructio is to install the selected systems as they were tested in the laboratory to duplicate the intended performance. The inspection and reporting process is well delineated between the IBC and two supporting documents published by the American Society for Testing and Materials (ASTM).The inspection frequency defined by the owner or architect can consist of continuous inspection of all firestopping, random observations of a minimum percentage of the installed systems, or destructive testing of a lesser percentage of installed systems.

On some projects there may be a need to develop project drawings that show the type and location of every firestopping system so that future occupants and maintenance personnel know what type of firestopping needs to remain in place. This can also include labels on each individual firestopping installation.

We hope this ***"Lessons Learned"*** has increased your understanding of firestopping and the new IBC requirements for the inspection of firestopping.

Respectfully,
ECS Corporate Services, LLC