March 22, 2010

3M Fire Protection Products
Mr. Mark W. Lund, P.E.
3M Center, Building 223-2N-20
St. Paul, MN 55144-1000

Our Reference: 10CA13947, File R9700

Subject: Air Leakage of 3M Fire Protection Products' Fire Barrier Pass-Through Firestop Device

Dear Mr. Lund:

This is in response to your request that we provide comments on the provisions for sealing penetrations through smoke barrier assemblies as contained in the 2009 Editions of NFPA 101 "Life Safety Code®". The code language extracted is shown below:

> **8.5.6.2** Penetrations for cables, cable trays, conduits, pipes, tubes, vents, wires, and similar items to accommodate electrical, mechanical, plumbing, and communications systems that pass through a wall, floor, or floor/ceiling assembly constructed as a smoke barrier, or through the ceiling membrane of the roof/ceiling of a smoke barrier assembly, shall be protected by a system or material capable of restricting the transfer of smoke.

The code requirement clearly states that penetrations through smoke barrier assemblies shall be protected by either a system or material capable of restricting the transfer of smoke. NFPA 101 provides definitions of key terms in Chapter 3. No definition is provided for the word "restrict" and therefore the dictionary should be referenced to provide a working definition for "restrict". The word "limit" is synonymous with "restrict", so the code in essence requires a system or material to be used to limit smoke transfer. Accordingly, it is our judgment that tests conducted in accordance with the air leakage test procedure described in ANSI/UL 1479 "Fire Tests of Through-Penetration Firestops" provide evidence of the suitability of a particular system or material to restrict or limit smoke transfer through smoke barrier assemblies. In fact, it was similar wording appearing in the 1991 Edition of NFPA 101 which prompted UL to develop the air leakage test procedure in 1993.

3M Fire Protection Products' Fire Barrier Pass-Through Devices have published L Ratings (air leakage ratings) at both ambient and elevated temperatures confirming their ability to restrict or limit smoke transfer. The L Rating is achieved with a minimum 1/8 in. depth of 3M Fire Barrier Moldable Putty+ material applied at both ends of the firestop device and at the wall/device interface. Although values are obtained at ambient and 400° F, testing has shown ambient

testing to be more critical and the resulting values are always demonstrably higher at ambient than they are at the elevated temperature. The 3M Fire Barrier Pass-Through 4 in. Square Device, for example, has achieved air leakage values at ambient of Less Than 1 CFM/Device empty and 1 CFM/Device at 50% calculated fill of a variety of data cables. In other words, the L Rating for the 3M Fire Barrier Pass-Through Device applies to blanks and to devices with cables in the entire range of 0% to 100% visual fill. This is shown in Through Penetration Firestop Systems Nos. C-AJ-3250 and W-L-3289 .

Clearly, the 3M Fire Barrier Pass-Through Devices restrict the transfer of smoke. Based upon this line of reasoning, it is our judgment these devices comply with the requirements of Section 8.5.6.2 in the 2009 Edition of NFPA 101 "Life Safety Code®".

As always, the ultimate decision regarding the suitability of any product or system in meeting code requirements lies solely with the local authority having jurisdiction. While this represents our judgment based on our experience with how code officials have interpreted various provisions of building codes relating to passive fire and smoke protection, in no way is it meant to usurp a local authority having jurisdiction's power to determine final code compliance and acceptance.

This letter completes the work anticipated under Project 10CA13947. Should you have any questions or comments concerning the above, please feel free to contact the undersigned.

Sincerely,

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Reviewed by:

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