INTERNATIONAL FIRESTOP COUNCIL
THE Source of Firestop Expertise®

RECOMMENDED IFC GUIDELINES FOR EVALUATING FIRESTOP SYSTEM ENGINEERING JUDGMENTS

PERIMETER FIRE BARRIER SYSTEMS

The International Firestop Council, IFC, is a not-for-profit association of manufacturers and users of fire protective materials and systems. IFC's mission is to promote the technology of fire containment in modern building construction through research, education programs, and the development of safety standards and code provisions. These recommended guidelines are presented as part of the IFC's educational information program. They are for informational and educational purposes.

THE PREMISE OF FIRESTOP SYSTEMS

Perimeter Fire Barrier systems protect against the passage of fire, hot gasses and toxic smoke through the void between the floor slab edge and the curtain wall.

These systems are required by building codes to be tested and rated as part of an assembly in accordance with ASTM E 2307, Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multi-Story Test Apparatus, or with an approved material capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste when subject to ASTM E119 time-temperature conditions under a positive pressure differential of 0.01 inch water column.

All elements of a tested and rated perimeter fire barrier system, including the assembly into which the system is installed, constitute a specific and inseparable engineered unit that must be utilized as such. These systems (designs) are tested and listed by independent testing agencies and the specific elements of each design become a part of the listing and a necessity for the performance of the system.

When field conditions differ from original design or unanticipated construction hindrances are encountered, Engineering Judgments (EJ's) are typically made that recommend alternative methods to ensure performance of the firestop system is not compromised. Generally these conditions or hindrances cannot be easily or cost-effectively redesigned so alternative protection schemes must be implemented to maintain the system's integrity. Since these recommendations are not based upon identical designs as that which were fire tested, it is important that they be developed using sound engineering principles and good judgment.

Construction industry professionals, building officials, fire officials, firestop contractors and other stakeholders need appropriate guidelines for evaluating and using such judgments. As such, the IFC developed *Recommended IFC Guidelines for Evaluating Firestop System Engineering Judgments – Perimeter Fire Barrier Systems*.

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IFC ENGINEERING GUIDELINES

Perimeter Fire Barrier system engineering judgments should:

1. Not be used in lieu of tested systems when tested systems are available.
2. Be issued only by firestop manufacturer's qualified technical personnel or, in concert with the manufacturer, by a knowledgeable registered Professional Engineer, or Fire Protection Engineer, or an independent testing agency that provides listing services for the systems.
3. Be based upon interpolation of previously tested perimeter fire barrier systems that are either sufficiently similar in nature or clearly bracket the conditions upon which the judgment is to be given. Additional knowledge and technical interpretations based upon accepted engineering principals, fire science and fire testing guidelines (e.g. ASTM E 2032 – Standard Guide for Extension of Data from Fire Endurance Tests) may also be used as further support data.
4. Be based upon full knowledge of the elements of the construction to be protected and the understanding of the probable behavior of that construction, and the recommended firestop system protecting it, were it to be subjected to the Standard Fire Test Method for the required fire rating. It is important to understand that although it is the joint between the slab edge and curtain wall that is evaluated during testing, the surrounding construction components and insulation of the system is also important in insuring acceptable joint performance.
5. Be limited only to the specific conditions and configurations upon which the engineering judgment was rendered and should be based upon reasonable performance expectations for the recommended firestop system under those conditions.
6. Be accepted only for a single specific job and location and should not be transferred to any other job or location without a thorough review of all aspects of the next job or location's circumstances.

BASIC PRESENTATION REQUIREMENTS

Proper perimeter fire barrier system engineering judgments should:

1. Be presented in an appropriately descriptive written form with or without detail drawings as may be deemed necessary.
2. Clearly indicate that the recommended system is an Engineering Judgment and NOT a listed system.
3. Include clear directions for the installation of the recommended firestop system.
4. Identify the job name, location and firm the EJ is issued for, along with the non-standard conditions and hourly rating required.
5. Provide complete descriptions of critical elements for the system configuration. These shall include, but not limited to the following:

a. Basic, Common Factors
   - Type(s) of assembly used e.g. Glass, Aluminum, Granite, Concrete Spandrel
   - Hourly rating required

b. Perimeter Fire Barrier System
   - Closest Listed System upon which the EJ is based.
   - Joint width
   - Static or Dynamic
   - Insulation type(s), thickness and compression, etc.
   - Five Basic Principles
     1. Mechanical Attachment of the Spandrel Insulation
     2. Protection of the Mullions
     3. Compression fitting and orientation of the Safing Insulation
     4. Installation of a Reinforcement Member(s), stiffener, at the Safe-Off area behind the spandrel insulation.
     5. Firestop Coating, type, thickness

By following the above evaluation process for Perimeter Fire Barrier Systems' Engineering Judgments, these can be developed in accordance with sound engineering practice to ensure that life safety and structural integrity are not compromised.