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## **RECOMMENDED IFC GUIDELINES FOR EVALUATING FIRESTOP SYSTEMS ENGINEERING JUDGMENTS (EJ's)**

The International Firestop Council is a not-for-profit association of manufacturers, distributors 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, educational programs and the development of safety standards and code provisions. These recommended guidelines are presented as part of IFC's educational information program. They are for informational and educational purposes.

### THE PREMISE OF FIRESTOP SYSTEMS

Firestop systems protect against the passage of fire, hot gases and toxic smoke through openings in walls, floors and floor/ceiling assemblies for through-penetrations, membrane penetrations, joints, blanks, gaps and voids. These systems are required by building codes to be tested and rated as part of an assembly in accordance with ASTM E 814 (UL 1479) for through-penetration systems or ASTM E 1966 (UL 2079) for construction joint systems\*. This ensures that each specifically designed system will maintain the fire rated integrity of the particular type of assembly in which it is intended for use.

\* Note: A new Draft ASTM Standard is under development for determining the fire endurance of perimeter fire barrier systems.

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

Beyond the listed firestop systems, there is a need for a means to properly address unanticipated construction configurations that fall outside of the envelope of tested systems. Because such conditions often cannot be redesigned and must not be ignored, the firestop industry addresses these types of occurrences through the issuance of engineering judgments (EJ's). In that these recommendations are not based upon identical fire testing of the specific design in question, it is important that engineering judgments be developed in accord with sound engineering practice to ensure that life safety and structural integrity concerns are not compromised.

Construction industry professionals, officials, fire officials, firestop contractors and others need appropriate guidelines for evaluating and using such judgments. Toward that end, the IFC has developed a set of Recommended IFC Guidelines for Evaluating Firestop Systems Engineering Judgments.

## IFC EJ GUIDELINES

Firestop system engineering judgments should:

1. Not be used in lieu of tested systems when 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 firestop systems.
3. Be based upon interpolations of previously tested firestop 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 principles, 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 understanding of the probable behavior of that construction and the recommended firestop system protecting it were they to be subjected to the appropriate Firestop Standard Fire Test Method for the required fire rating duration.
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 thorough and appropriate review of all aspects of the next job or location's circumstances.
7. Be accepted in jurisdictions that permit Alternative Methods per applicable Model Building Code.

## BASIC PRESENTATION REQUIREMENTS

Proper firestop system engineering judgments should:

1. Be presented in appropriately descriptive written form with or without detail drawings as may be deemed necessary.

2. Clearly indicate that the recommended firestop system is an engineering judgment and NOT a listed system.
3. Identify the job name, location and firm EJ is issued for along with the non-standard conditions and hourly rating required.
4. Provide complete descriptions of critical elements for the firestop system configuration. These should include, but are not limited to the following:

#### Basic, Common

- Type(s) of assembly used or being penetrated
- Hourly rating required

#### Through Penetrations

- Penetrating item(s) (type, size etc.)
- Annular space requirements, (minimum, maximum, actual, nominal etc.)
- Opening size
- Firestop product(s) to be used, type and amount (thickness if applicable)
- Accessory item(s) (i.e. anchors, backing material, etc.)

#### Joints

- Joint Width (installed width, nominal)
- Movement Requirements
- Movement Class (thermal wind sway, seismic)
- Firestop product(s) to be used, type and amount (thickness if applicable)
- Accessory item(s) (i.e. insulation type, thickness and compression, etc.)

1. Include clear directions for the installation of the recommended firestop system.
2. Include dates of issue and authorization signature as well as the issuer's name address and telephone number
3. Reference tested system(s) which design (EJ) is based on.
8. Justification (i.e. UL, OPL or other independent laboratory system(s) and or opinions)

IFC recommends that these guidelines be considered in evaluating whether any firestop system engineering judgment meets minimal requirements. Questions concerning the EJ request should be addressed to the initiator of the judgment.

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