Introduction to Firestopping

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Presented by: 3M Industrial Adhesives and Tapes Division
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Description: Provides an overview of firestop systems and their role in saving lives and property, with discussions on testing, technologies, and products that help prevent the spread of fire, smoke, and toxic gases.

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REGISTERED CONTINUING EDUCATION PROGRAM

Purpose and Learning Objectives

Purpose: Provides an overview of firestop systems and their role in saving lives and property, with discussions on testing, technologies, and products that help prevent the spread of fire, smoke, and toxic gases.

Learning Objectives:

At the end of this program, participants will be able to:

- discuss the importance of firestopping, how it works, and where firestop systems are used
- describe the testing requirements for firestop systems
- identify the correct system detail for a firestop application based on project parameters, and
- describe the four firestopping technologies, and identify the types of products appropriate for each technology.

How to Use This Online Learning Course

- To **view** this course, use the **arrows** at the bottom of each slide or the up and down arrow keys on your keyboard.
- To **print or exit** the course at any time, press the **ESC** key on your keyboard. This will minimize the full-screen presentation and display the menu bar.
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The Importance of Firestopping

Fire Statistics

All too often, while watching the news on TV or reading the newspaper, we learn that a catastrophic fire has caused death or injury and millions of dollars in damage. We all face the constant threat of experiencing a serious fire in our own lives.

Each year in the U.S., there are millions of fires, thousands of deaths, tens of thousands of injuries, and billions of dollars in property loss—making fire safety a matter of critical importance.

The National Fire Protection Association (NFPA), the world's leading advocate of fire protection, is a non-profit organization that helps establish building codes and standards that are used throughout the U.S. NFPA estimates for 2012 were 99,500 non-residential structure fires in the U.S. These fires resulted in 65 deaths, 1,525 injuries, and $2.6 billion in direct dollar loss.

Fire Statistics

This chart from NFPA records shows the major U.S. building fires over the last 30 years.

Rank	Event	Date	Loss in year it occurred	Adjusted loss in 2004 dollars
1	World Trade Center New York, NY	9/11/2001	$33.4 billion	$35.6 billion
2	Polyolefin plant Pasadena, TX	10/23/1989	$750 million	$1.1 billion
3	Power plant at auto manufacturing complex Dearborn, MI	2/1/1999	$650 million	$736 million
4	Textile mill Methuen, MA	12/11/1995	$500 million	$619 million
5	Petroleum refinery Norco, LA	5/5/1988	$330 million	$526 million
6	One Meridian Plaza, high-rise office building Philadelphia, PA	2/23/1991	$325 million	$450 million
7	Chemical company plant Pampa, TX	11/14/1987	$215 million	$357 million

Firestop Responsibility

A firestop is a fire protection product or system that can help protect people, equipment, and buildings. Firestop systems seal joints and openings in fire-rated wall and floor assemblies, and help limit the devastating effects of fire.

There are many parties that can be held responsible for ensuring a building is properly firestopped, including the building owner, architect, specifier, consultant, general contractor, sub-contractor, installer, code official, and manufacturer.

Non-compliance and/or improper installations can lead to legal issues.

Fire-Related Legal Issues

In American States Insurance Company vs. Hannan Construction, the builder allegedly failed to firestop the open plenum, and was found negligent.

In the Sunlake Apartment Residents vs. Tonti Development case, fire destroyed the building and the residents then sued. The architect settled the case, and in turn sued the government inspectors.

In the case of One Meridian Plaza Businesses vs. Owner, fire destroyed the 40-story building, and tenants and nearby businesses sued the owner. The building owner sued government officials and the general contractor.

Complete Fire Protection Philosophy

A fire protection philosophy should have these primary safety objectives:

- Protect the lives of occupants
- Protect property and assets
- Minimize downtime and ensure continuity of operations, limiting the impact on business operations when fire does occur

A Balanced Approach to Fire Safety

A balanced approach to fire protection uses all available tools to improve fire safety. The following four approaches, used together, help provide a fire-safe environment.

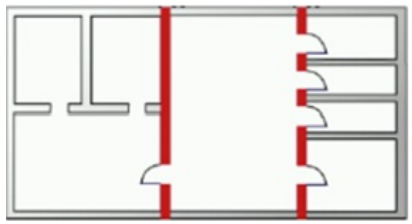
Education: Exit signs and “stop, drop, and roll” awareness campaigns are examples of fire education.

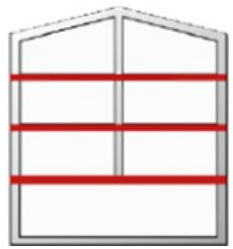
Detection: Smoke detectors are another vital approach to fire protection.

A Balanced Approach to Fire Safety

Active Suppression: The traditional approach to fire protection has been active systems, meaning that the emphasis has been on providing tools to limit the damage a fire can do. Examples include sprinklers, suppression systems, and fire extinguishers.

Passive Containment: While the methods discussed so far are important, they represent only a partial approach to increasing fire safety. In today's construction, the emphasis is on containing a fire and limiting fire damage by installing both active systems and passive systems. Fire-rated construction is utilized to provide compartmentation, which in essence separates a building into compartments in order to slow the spread of a fire through a building (from room to room and floor to floor).

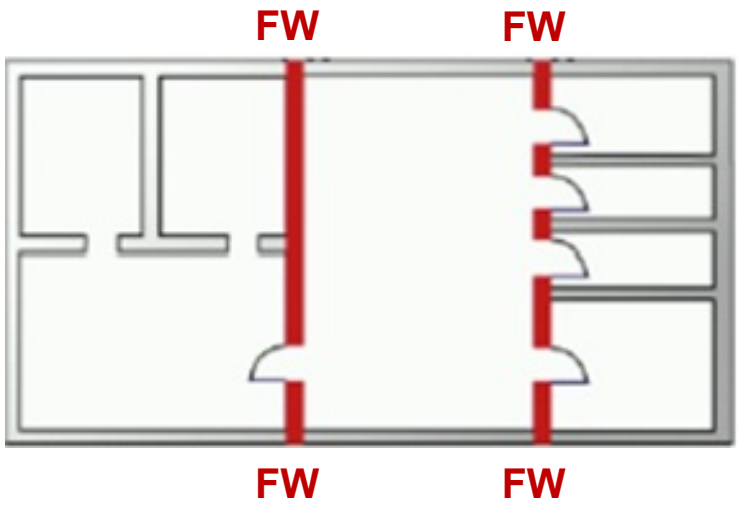




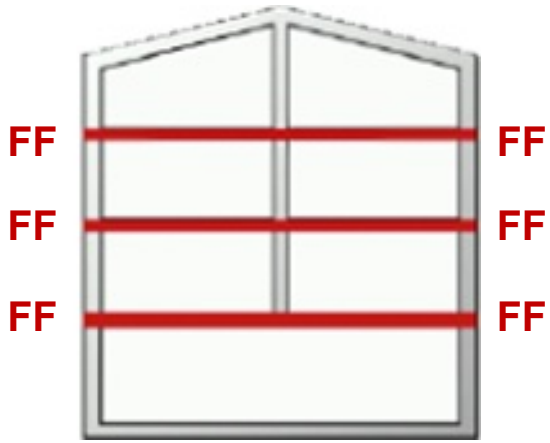
Passive Systems: Compartmentation

Compartmentation is an engineering concept. The spread of smoke and fire to adjacent areas of the building can be restricted by dividing a building into separate compartments with fire-resisting walls and floors, thereby helping to protect occupants and sensitive property. Compartmentation is used worldwide as a method of improving fire safety.

Compartments are made by fire-rated assemblies, fire-rated doors, ducts with dampers or fire-resistive ducts, and firestop systems.



FW = Fire-Rated Wall



FF = Fire-Rated Floor

Passive Systems: Containment

Containment is related to firestopping. Since fire travels via the path of least resistance, any opening or gap can provide a conduit for fire to jump from one room or floor to the next.

When a fire-rated wall or floor is penetrated by a pipe, cable, duct, etc., then the fire rating of that wall or floor has been de-rated. Firestopping of openings in fire-rated components re-establishes the fire rating of that wall or floor. Firestopping helps contain smoke, toxic gases, and fire, and aids in the protection of escape routes.

Three Faces of Containment

There are three areas of containment that will be addressed in this course.

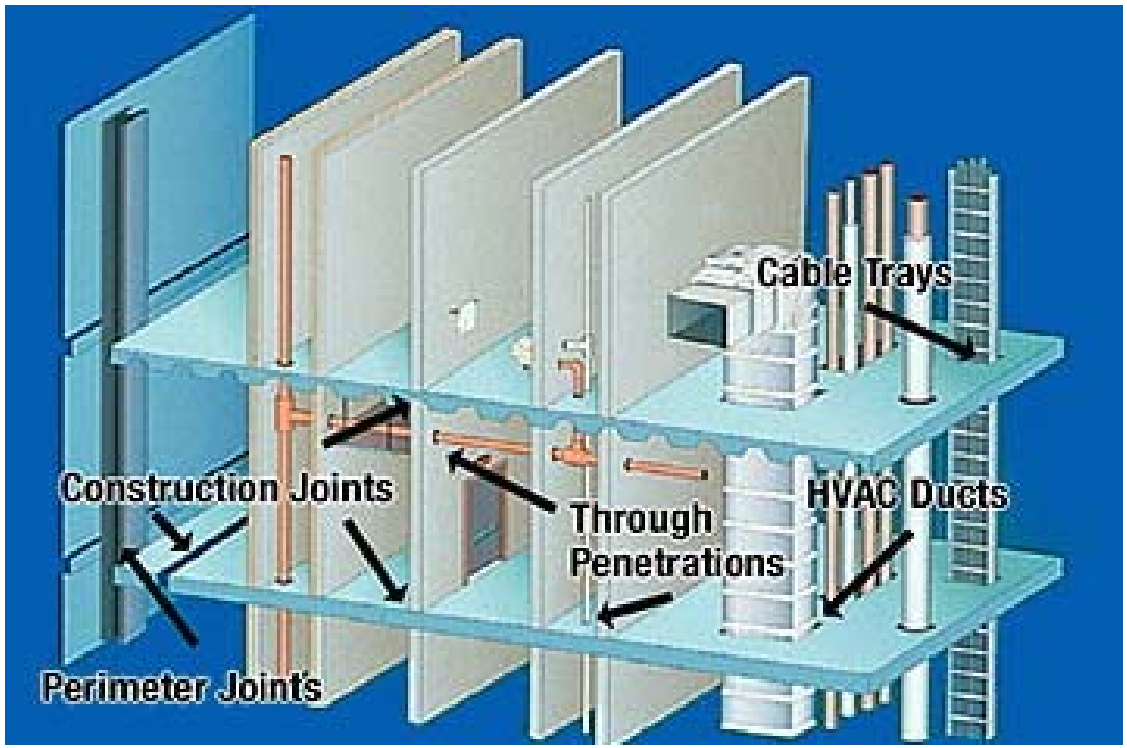
Through Penetrations: Through penetration firestopping is the process of filling the voids around penetrating items in fire-rated walls, floors, and floor/ceiling assemblies.

Construction Joints: Construction joints are linear openings in or between adjacent fire-rated assemblies. These openings are designed to allow independent movement of the building. As such, a firestop used to protect a construction joint typically requires movement capability.

Three Faces of Containment

Flexible Wrap Systems: Flexible wrap systems provide fire protection for ventilation air ducts and grease ducts with the use of duct wrap; fireproofing for critical electrical components and structural steel can come via an endothermic mat.

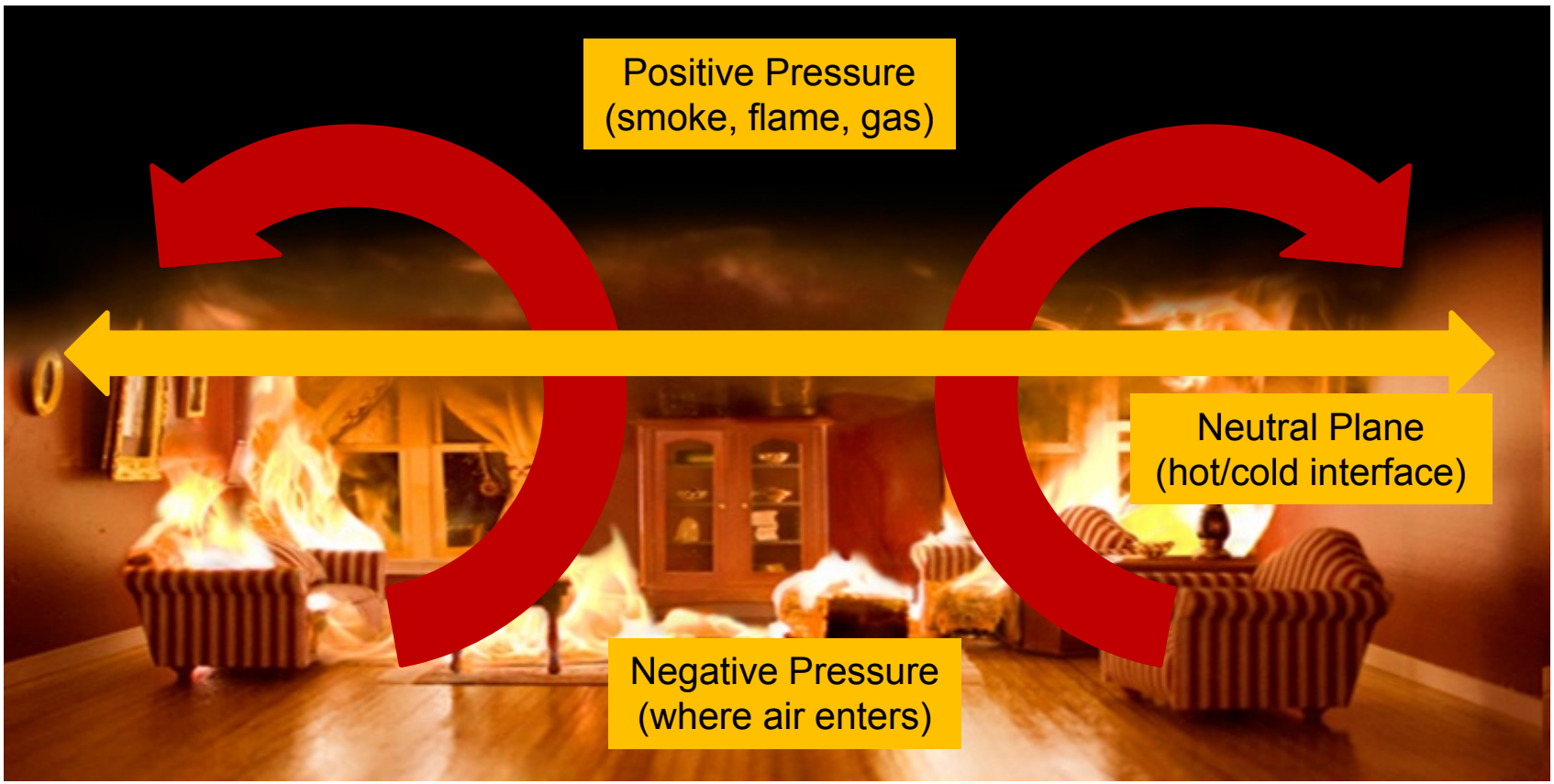
These systems are easier to install than alternative protective systems (e.g., drywall shafts or cementitious spray) and provide zero clearance to combustibles.



Defining Firestops

Mechanics of a Fire

The generation of heat in large quantities causes the gaseous products of reaction to expand and generate high pressures. This rapid generation of high pressures constitutes the heat-generating chemical reactions.



Containing the Spread of Fire, Smoke, and Gases

The leading cause of death in fires is smoke and toxic gas inhalation.

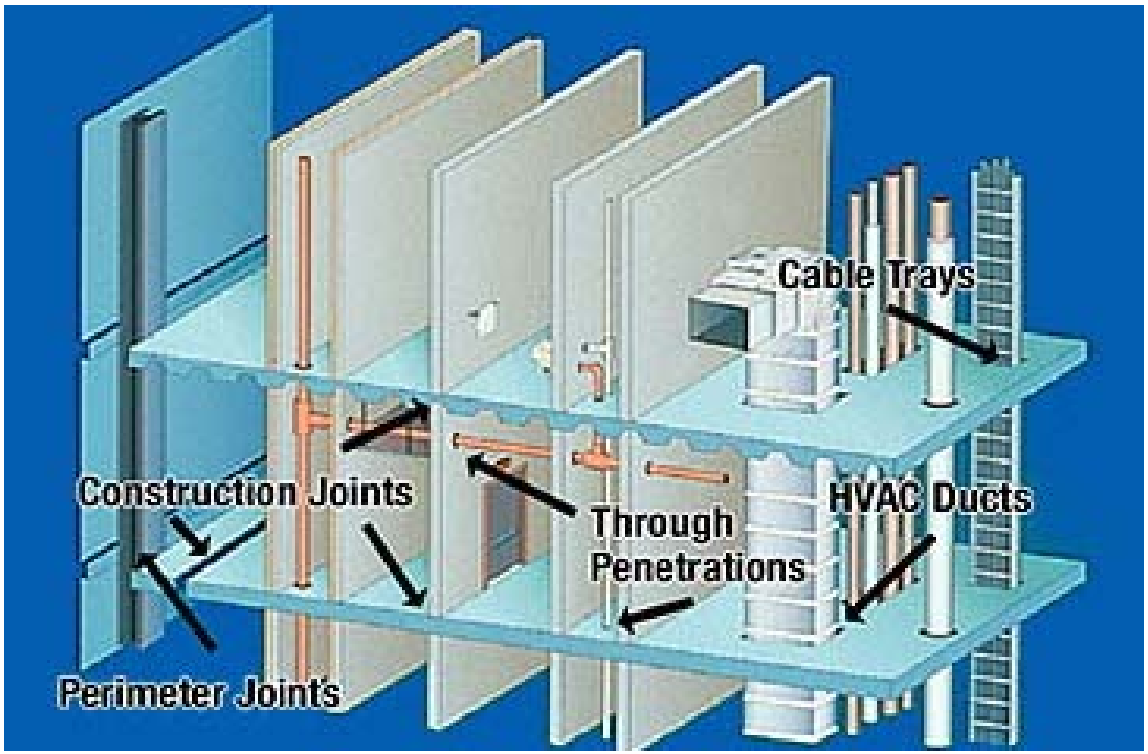
Underwriters Laboratories' tests show that a fire can completely engulf a typical office in less than five minutes. When you consider how quickly a fire spreads through just one room, you begin to understand the importance of passive fire protection.

When considering the effects of a fire through an entire building, it is important to understand that unprotected openings through rated walls and floors could allow fire, smoke, and toxic gases to spread from room to room (or floor to floor) in an extremely short period of time. However, the use of fire-rated construction, compartmentation, and properly firestopped openings helps contain fire, smoke, and toxic gases at the point of origin.

Typical Firestop Applications

All construction trades deal with the issue of firestopping. Plumbers, electricians, drywallers, HVAC, and other contractors run service installations throughout a building.

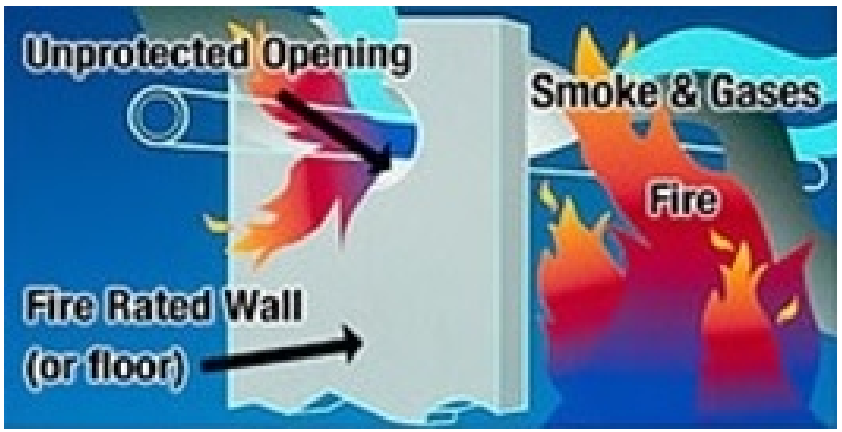
All these installations create openings or gaps in the fire-rated assemblies that must be firestopped to restore the integrity of the fire-rated assembly.



Functions of a Firestop

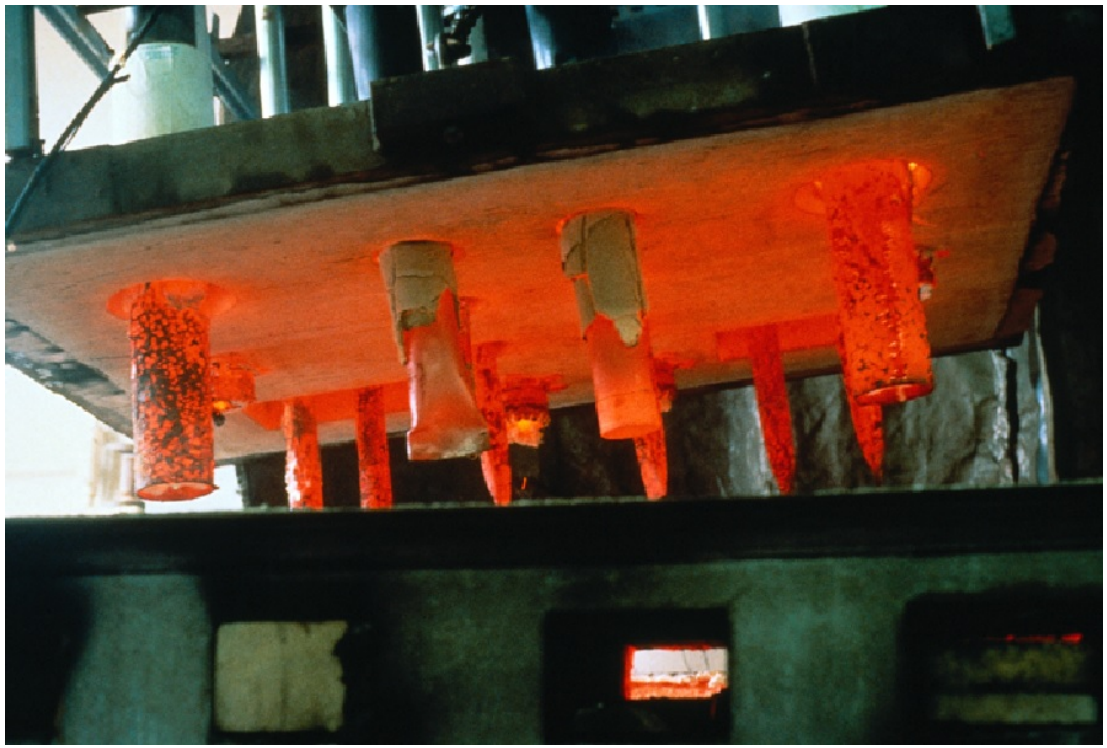
A properly installed, tested, and listed firestop system will do the following for a specified time period, based on the fire rating:

- Prevent the passage of fire
- Provide an effective smoke and toxic gas barrier
- Retard the transmission of heat



Unprotected Assembly

Firestopped Assembly



Testing Fire Protection Products

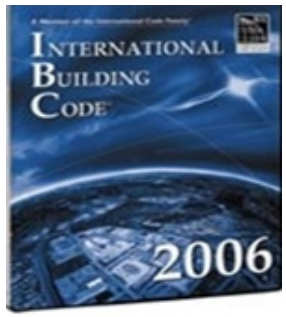
Building Codes and Approved Methods

Building codes are written for all aspects of construction, including firestopping. Code bodies place an emphasis on approved methods, defined as a material, device, or system tested in accordance with a nationally recognized test standard at a recognized testing facility.

Examples of codes include the following:

- International Code Council (ICC)
- International Building Codes (IBC)
- National Fire Protection Agency (NFPA)
- International Mechanical Code (IMC)
- Uniform Plumbing Code (UPC)
- Uniform Mechanical Code (UMC)

The relevant subsections of the International Building Code are “Through Penetrations,” “Membrane Penetrations,” “Joints,” “Perimeter Joints,” “Fire Barriers,” and “Smoke Barriers.”



ASTM Standards

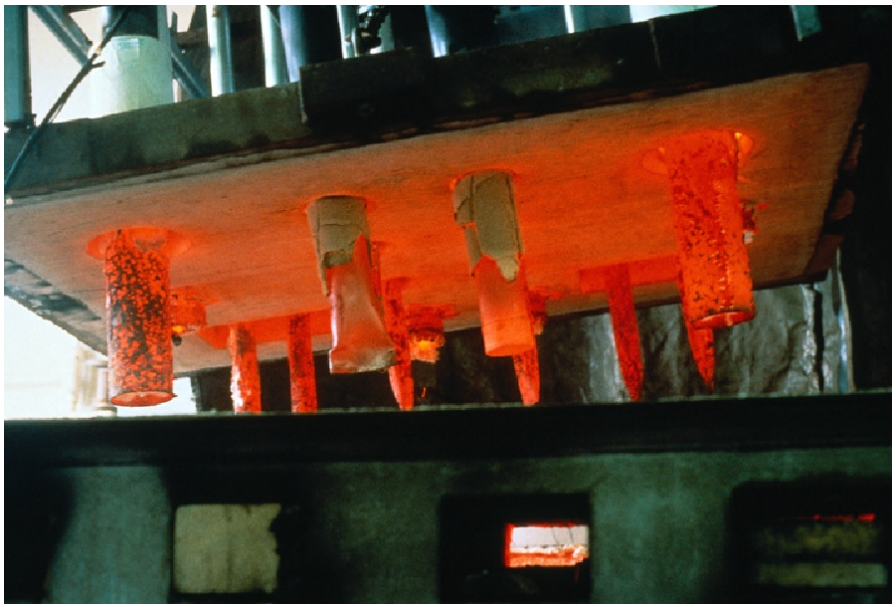
ASTM tests fire protection assemblies according to a set of established test methods. The most commonly cited ASTM fire protection standards are ASTM E814 (ANSI/UL 1479) Standard Test Method for Fire Tests of Penetration Firestop Systems (under positive furnace pressure of minimum 0.01 inches of water column), and ASTM E119 (ANSI/UL 263) Standard Test Methods for Fire Tests of Building Construction and Materials.

For example, in the case of a floor/ceiling assembly, to meet the ASTM standard all parts of the assembly, including through penetration firestopping products, must meet the established standards for containing a fire within the established test duration.

Fire Test Steps

The assembly is built and placed on the furnace. Details of the assembly are documented. Thermocouples are placed in prescribed locations.

The assembly is then exposed to the proper fire curve for the required duration. Flames must not be above the floor assembly; in some cases, a maximum temperature must not be exceeded at the non-fire side of the assembly.



Fire Test Steps

In most cases, the assembly is also subjected to and must pass a hose stream test.

The ASTM E119 (ANSI/UL 263) Standard Test Methods for Fire Tests of Building Construction and Materials tests the ability of construction materials and products to withstand a severe fire exposure under positive pressure for a specified length of time. The graph on the next slide demonstrates the ASTM E119 requirements.

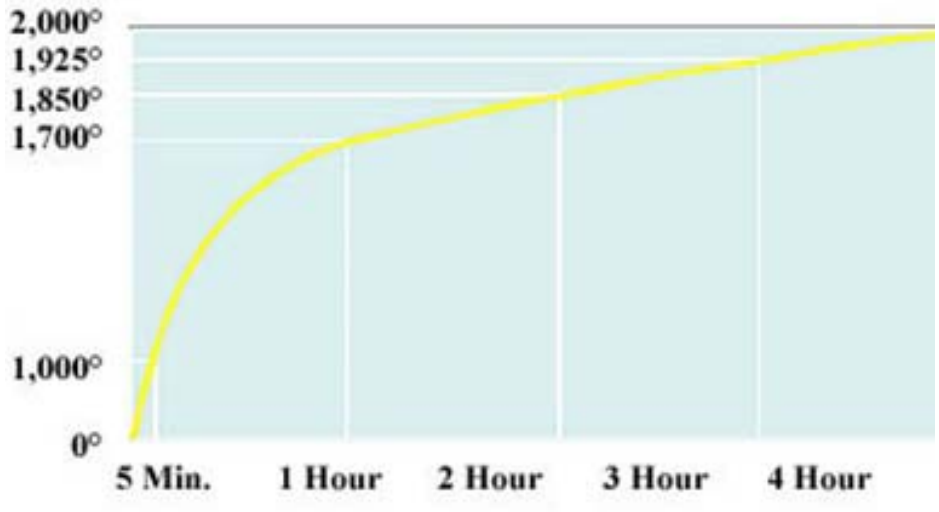
Example of Testing Standard: ASTM E119

The material must withstand a temperature of:

- 1000°F (537.7°C) for 5 minutes
- 1700°F (926.6°C) for 1 hour
- 1850°F (1009.9°C) for 2 hours
- 1925°F (1051.6°C) for 3 hours, or
- 2000°F (1093.2°C) for 4 hours.

As a point of comparison, note that:

- PVC pipe melts at ~400°F
- fiberglass insulation melts at ~1050°F
- aluminum melts at ~1200°F
- steel yields at ~1000°F, and
- steel melts at ~2600°F.



ASTM E-119 Time Temperature Curve

Responsibilities of Testing Agencies

This standard has broad implications in many aspects of firestopping. However, there are also individual standards written for specific areas of firestop applications, for instance: ASTM E814 for through penetrations, ASTM E1966 for joint construction, ISO 6944 for air ducts, and ASTM E2336 for grease ducts.

There are various recognized independent, third-party North American testing agencies, including Underwriters Laboratories, Inc. (USA and Canada), Intertek – Omega Point Laboratories and Warnock Hersey, Factory Mutual Research, and Southwest Research Institute.

The responsibilities of testing agencies are to determine that a firestop system will pass the criteria of applicable test standards (e.g. ASTM E814), to provide listed systems or design listings for each approved manufacturer's tested configuration, and to establish a nomenclature for each category of listed systems.

An Effective Firestop

It is extremely important to remember that because of the complexities of designs and test parameters, only fully tested materials and systems should be used in actual building construction. Firestopping materials are not systems—systems employ firestopping materials. Products do not receive ratings—systems do.

What does an effective firestop provide?

According to the IBC, through penetrations must be protected by an approved penetration firestop system installed as tested in accordance with ASTM E814, with a minimum positive pressure differential of 0.01 inch (0.254 mm).

An effective firestop prevents the passage of fire for a specified length of time (F rating). The F rating measures fire resistance; flame must not pass through the assembly for the fire test duration. The system must have an F rating of not less than the required fire resistance rating of the wall penetrated.

An Effective Firestop

An effective firestop also retards the transmission of heat (T rating). The T rating states the time at which the non-fire side reaches the maximum allowed temperature.

The system must have an F rating equal to the T rating (temperature) if the through penetration is located outside a wall assembly. The exception to this is that a T rating is not required for floor penetrations that are contained and located within a wall cavity.

The T rating is typically expressed in hours, and indicates the length of time that the unexposed surface of a firestop assembly will not exceed 325°F (162.8°C) above its initial temperature during the ASTM E814 fire test.

An Effective Firestop

An L rating shows the effectiveness of the firestop as a smoke and toxic gas barrier. L ratings measure the rate of air leakage in cubic feet per minute per square foot of opening (CFM/sq. ft.). L ratings help in determining the suitability of firestop systems for the protection of penetrations and miscellaneous openings in floors and smoke barriers, for the purpose of restricting the movement of smoke in accordance with the National Fire Protection Association Life Safety Code, NFPA 101.

The W rating refers to a water-resistant and/or water-tight seal. It indicates the effectiveness of the firestop material in restricting the flow of water through penetrations in ceilings, floors, and walls occurring from exposure to the elements during construction and/or from other sources after occupancy. To receive a UL W Rating – Class 1, a firestop system is subjected to a three-foot (.9144 m) column of water pressure for 72 hours, with no leakage allowed. Immediately after water removal, the firestop system must pass the ASTM E814 fire and hose stream tests.

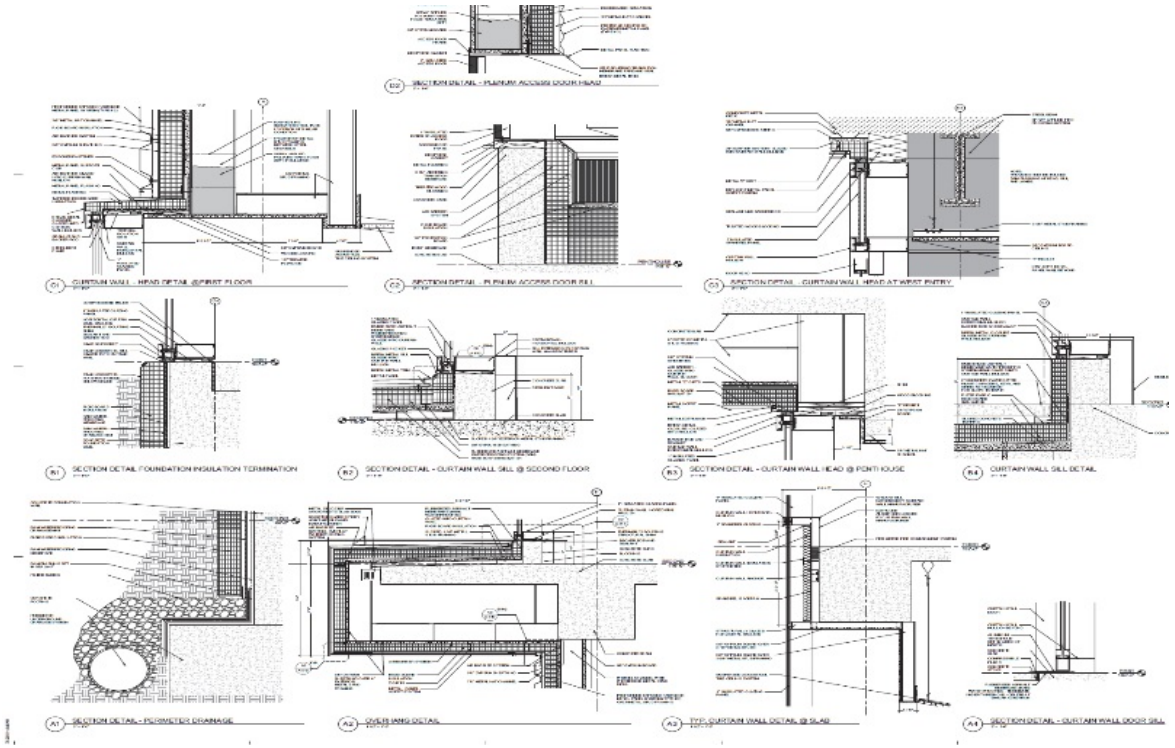
Other Common Performance Criteria

Below is a list of other common performance criteria for firestop systems or products:

- STC Rating (ASTM E90 and ASTM E413): Sound Transmission Class, the measure of the ability of a system to inhibit the transmission of sound
- Surface Burning (ASTM E84): Flame Spread and Smoke Development Index for a product, the travel of flames across a horizontal test specimen and the amount of smoke developed during the flame spread
- Volume Shrinkage (ASTM C1241): The change in volume that a product experiences as it dries or cures
- Mold Inhibition (ASTM G21): Measure of the ability of a product to inhibit the growth of microorganisms, such as mold
- Hardness (ASTM D2240): The hardness of a product after it has undergone any drying or curing time

Inspection Standards:

- ASTM E2174-10, Standard Practice for On-Site Inspection of Installed Fire Stops
- ASTM E2393-10, Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers



Engineering Judgments

Engineering Judgments

What do you do when you want to use an untested system? Changes to the building design happen and may result in a non-standard configuration.

When there is a job condition for which nothing has been tested—that is, no tested system exists to match the job conditions—you will need to go to the manufacturer for an engineering judgment based on an extrapolation from existing systems.

For example, the system has been tested with a 30-inch pipe, but you need to use a 40-inch pipe. In this case, you would need to request an engineering judgment from the manufacturer.

IFC Engineering Judgment Guidelines

It is important to understand both how non-standard applications are addressed and how the ratings are substantiated. Not everyone is qualified to write an engineering judgment, even if they have an engineering degree or are a licensed Professional Engineer. The International Firestop Council (IFC) has published a set of guidelines to help all parties involved in the proper creation and use of engineering judgments.

Engineering judgments for firestop systems should:

- not be used in lieu of tested systems when available.
- be issued only by a firestop manufacturer's qualified technical personnel or in concert with the manufacturer by a knowledgeable registered Professional Engineer, Fire Protection Engineer, or an independent testing agency that provides listing services for firestop systems.
- be based upon interpolation 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.

IFC Engineering Judgment Guidelines

Engineering judgments for firestop systems should also:

- 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 that construction if it was subjected to the appropriate standard fire test method for firestops for the rating indicated on the engineering judgment.
- be limited only to 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.
- be accepted only for a single, specific job and project location and should not be transferred to any other job or project location without thorough and appropriate review of all aspects of the next job or location’s circumstances.

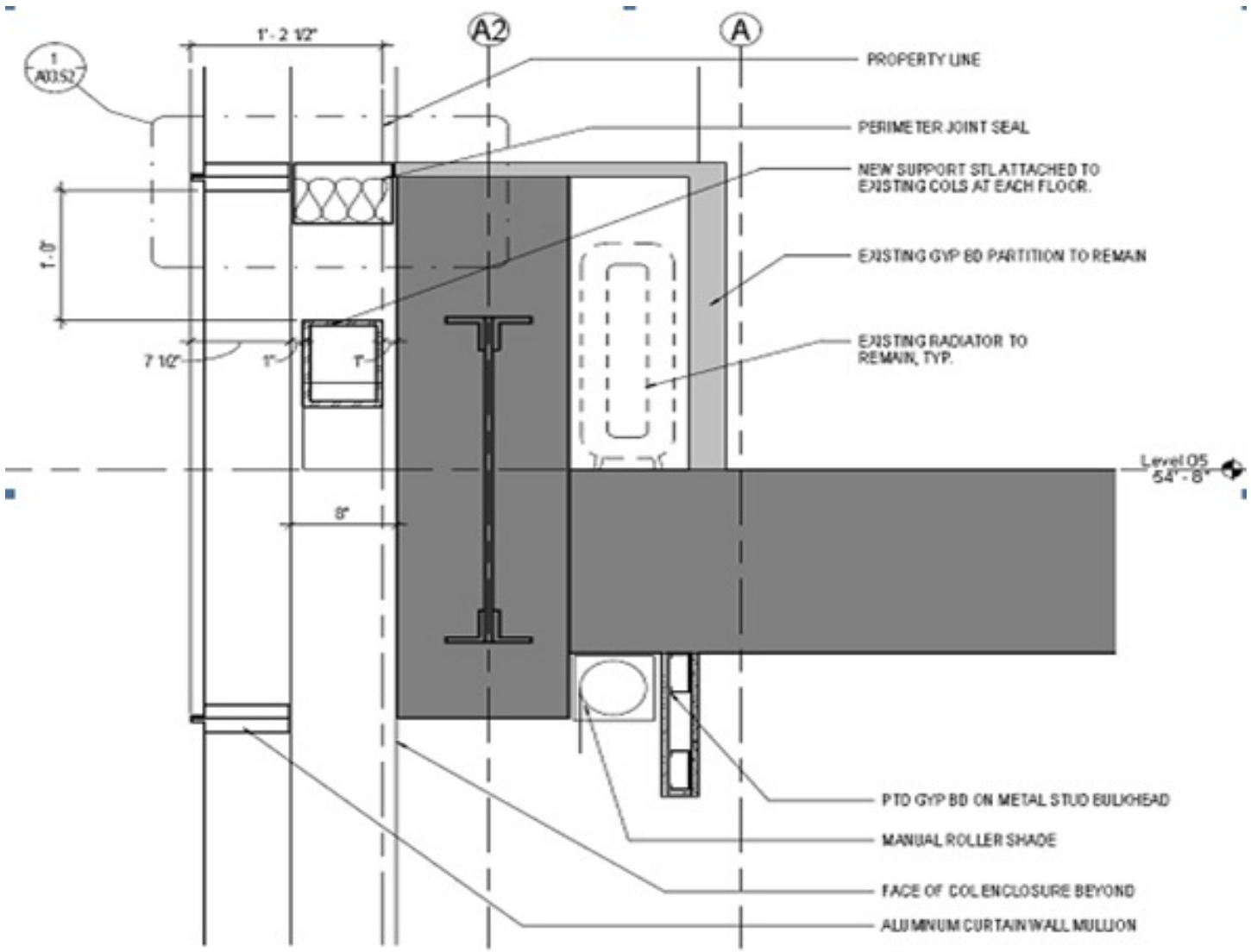
Additional Engineering Judgment Tips

Proper engineering judgments should:

- be presented in appropriately descriptive written form with or without detail drawings where appropriate.
- clearly indicate that the recommended firestop system is an engineering judgment.
- include clear directions for the installation of the recommended firestop system.
- include dates of issue and authorization signature as well as the issuer's name, address, and telephone number.
- reference tested system(s) upon which design (engineering judgment) is based.
- identify the job name, project location, and firm engineering judgment is issued to along with the non-standard conditions and rating supported by the engineering judgment.
- have proper justification (e.g., UL, ULC, Intertek, SWRI, or other independent laboratory system(s) and or opinions).
- provide complete descriptions of critical elements for the firestop configuration.

On the next slides are an actual submission and an engineering judgment form.

Actual Submission



Engineering Judgment Form

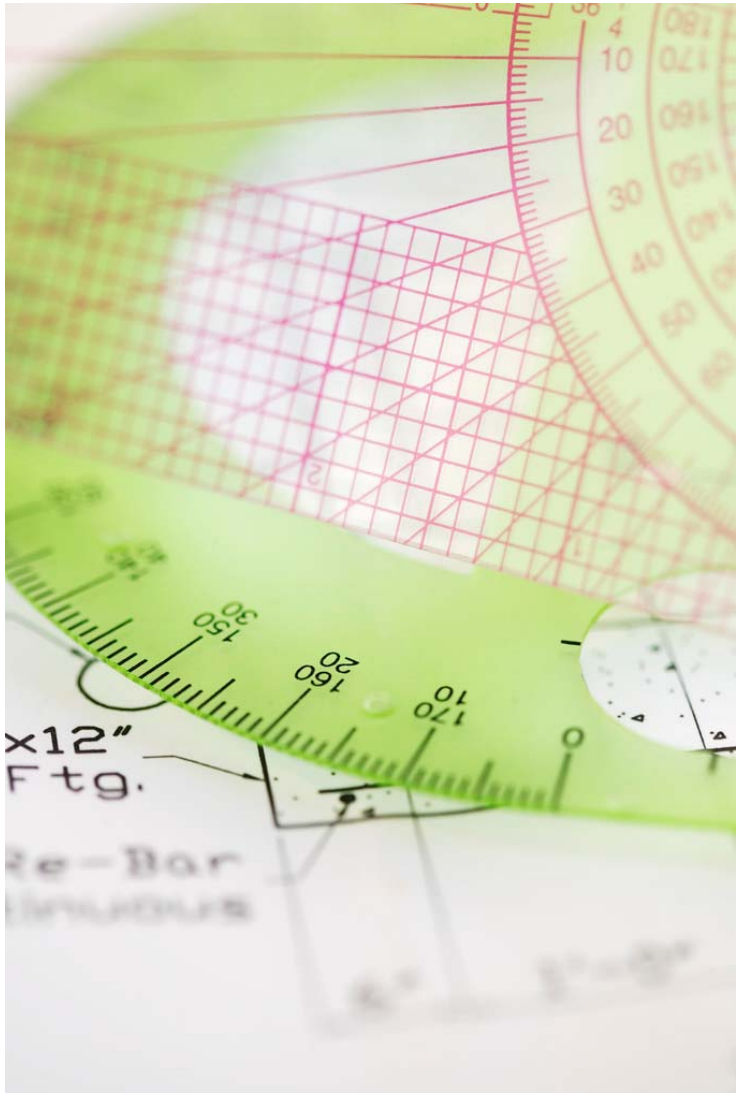
	Requester		email		Tel.	
	Project		email		Tel.	
	Contractor		email		Tel.	
	Architect		email		Tel.	
	Distributor		email		Tel.	
	Engineer					
Engineering Judgment Parameters						
Discussion Topic or Same As EJ						
Required Fields	Through Penetrations 1,2,3,4,5,8,10		Protected Items 1, 6,7,8, 10		Joint Description 1, 7, 8, 10	
1. Rating Requirements	**F (Hour) Rating:**			**H (Hose Stream) Rating:**		
	T (Temp) Rating:			**Combination Rating:**		
2. Assembly Description :	**Wall**		**Floor**		**Steel-Deck**	**Ceiling**
3. Base Material:	**Concrete**		**Block**		**Wood Assemblies**	**Drywall**
3.1. Thickness:						
4. Opening:	**Size Opening**		**Annular Space**	**Sleeved/Framed**		**Blank**
	Circular:		Minimum:	Yes		Yes
				No		No
				Material type:		
	Rectangular:		Maximum:			
5. Penetrating Items:	**Pipe Type**		**Cables**	**Cable Tray**		**Duct**
	Metallic		Type:	Dimension		Round
	Type:					Square
						Dampered
	Non Metallic		Size:	Size:		Exhaust Fume
	Type:					Grease
	Process & Supply	DWV				Ventilation
5.1. Penetrating Detail:	**Insulated**		#'s Cables per Bundle:	# Cables per tray:		Dimension
	Material type:					
						Gauge
						Other Details
	Thickness:		Multiples-Number & Spacing	% Cable Fill:		
6.1. Protected Item:	Type:		Size/gauge:	Wrap Type/layer number:		**Test Standard/Time**
6.2. Other Item Details:						
7. Joint Description	**Joint Application**		**Joint Type**	**Adjacent Assemblies**		
	Bottom of Wall		Joint Width:	From (type):		
	Floor to Floor		Dynamic			
	Floor to Wall		Static			
	Head of Wall		Nominal Joint Width:	To (type):		
	Wall to Wall		Movement Capabilities:			
	Perimeter Joint/curtain wall		Compression %			
			Extension %			

Choosing the Appropriate Firestop System

Correct System Detail

In order to choose the correct system detail for a firestop application, it is recommended to answer the questions covered in this section of the course.

The answers will define the parameters of the project and firestop application and can be found in system specifications.



Type of Construction

What is the floor or wall construction type and thickness?

Firestop applications are found in different types of construction, including (but not limited to) gypsum wall board, concrete floor or wall, precast concrete, post-tension concrete, and wood frame. The characteristics and thickness of the construction material used will affect the type of firestop product(s) and system(s) needed to firestop your application.

Concrete

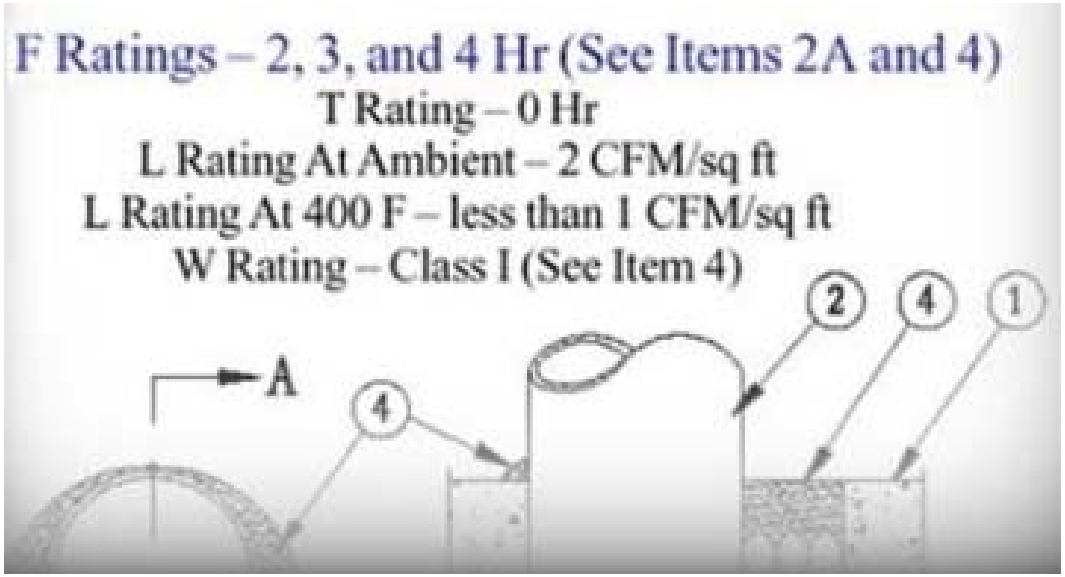
Wood Frame

Gypsum

Hourly Rating

What is the hourly rating of the assembly?

Each construction type is designed for a specific hourly rating. In general, when choosing a firestop system, its hourly rating must be equal to the hourly rating of the construction type.



Penetrating Items

What are the penetrating items?

There are many different types of penetrating items which need firestopping, including (but not limited to) metal pipe, plastic pipe, insulated pipe, cables and cable trays, grease and air ducts, and any combination of these items.

Each of these items reacts differently during a fire. Knowing this will help you select the correct firestop products and system detail.

Cables

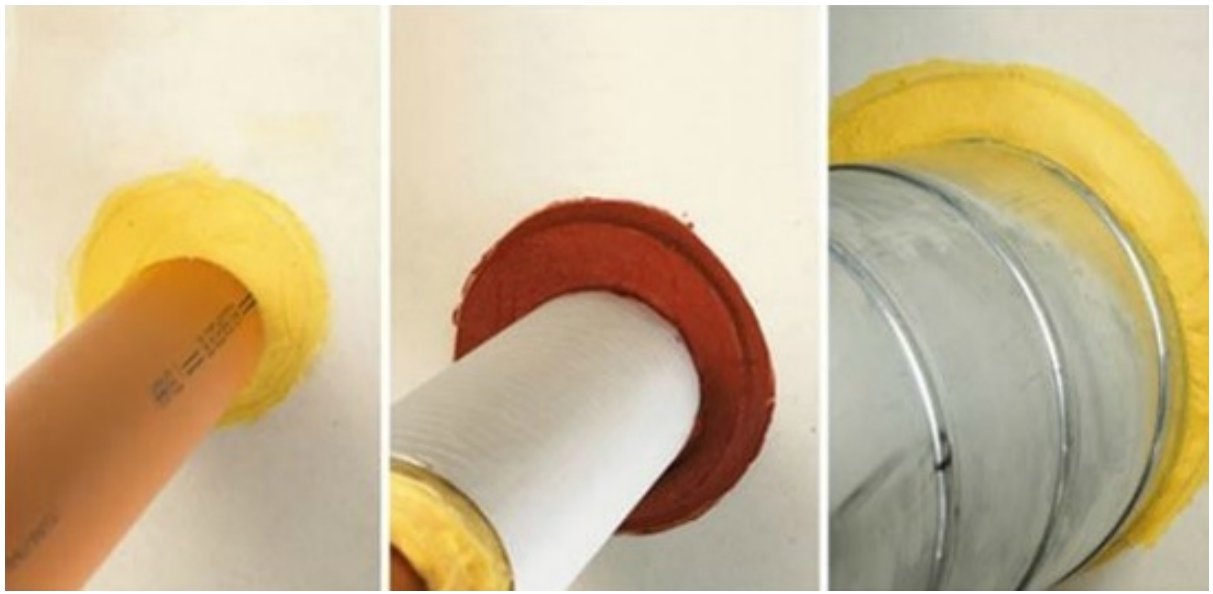
Pipes

Ducts

Penetrant Size

What is the size of the penetrating item?

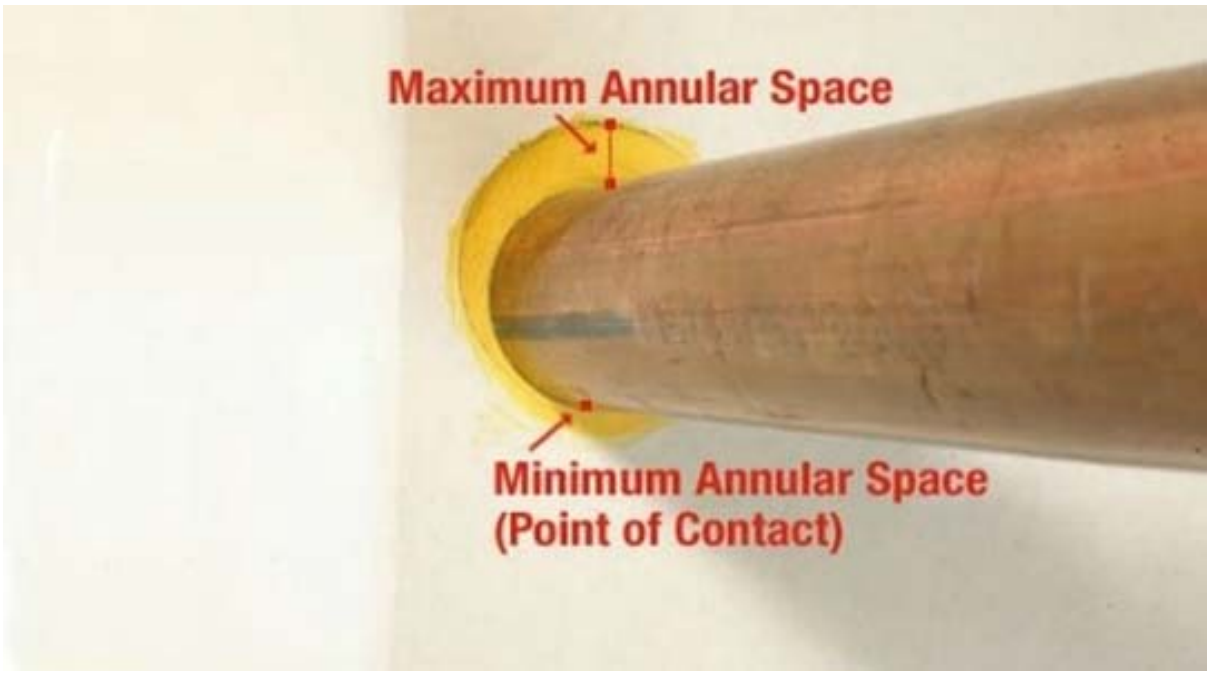
Knowing the size of the penetrating item is a significant factor in choosing a firestop system. For instance, firestopping a 2-inch plastic pipe requires different products and system details compared to the requirements for firestopping a 10-inch plastic pipe.



Annular Space

What is the annular space?

Annular space is the distance between the penetrating item and the periphery of the opening or the distance between multiple penetrations.

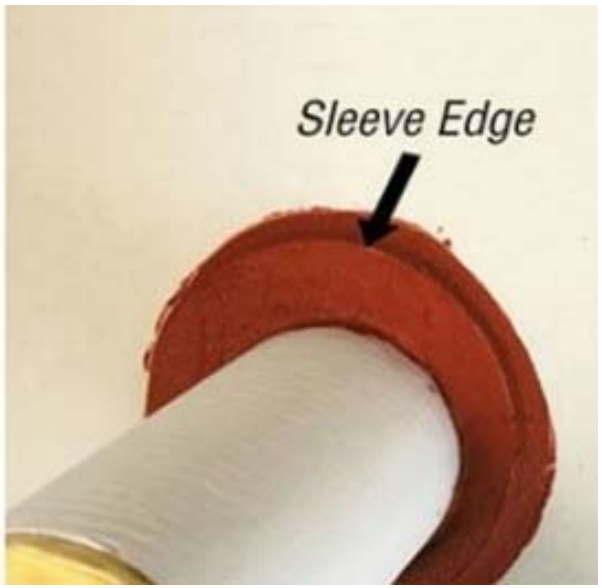


Steel Sleeve

Is a sleeve optional or required?

In some assemblies, a steel sleeve is required as part of the assembly. The system detail tells you whether a sleeve is required or optional.

Without Sleeve



With Sleeve

Percentage of Cable Fill

What is the percentage of cable fill?

The system detail states what calculated percentage of cable fill is allowed, and what size and types of cables may be used through the penetration.

This example shows a visual fill of 70%, with an actual/calculated fill of 35%.

Packing Material

What packing materials are required?

Packing materials are required in many system details. The system detail tells you what type of packing materials are acceptable. Typical packing materials include mineral wool, backer rod, and fiberglass.

Mineral Wool

Backer Rod

Fiberglass

Insulation Type

What is the insulation type and thickness?

There are different types of insulation used in the construction industry. It is important to know what type and thickness of insulation is used because they react differently during a fire. Types of insulation include foamglass, mineral wool, fiberglass, and AB/PVC foam insulation.

Mineral Wool

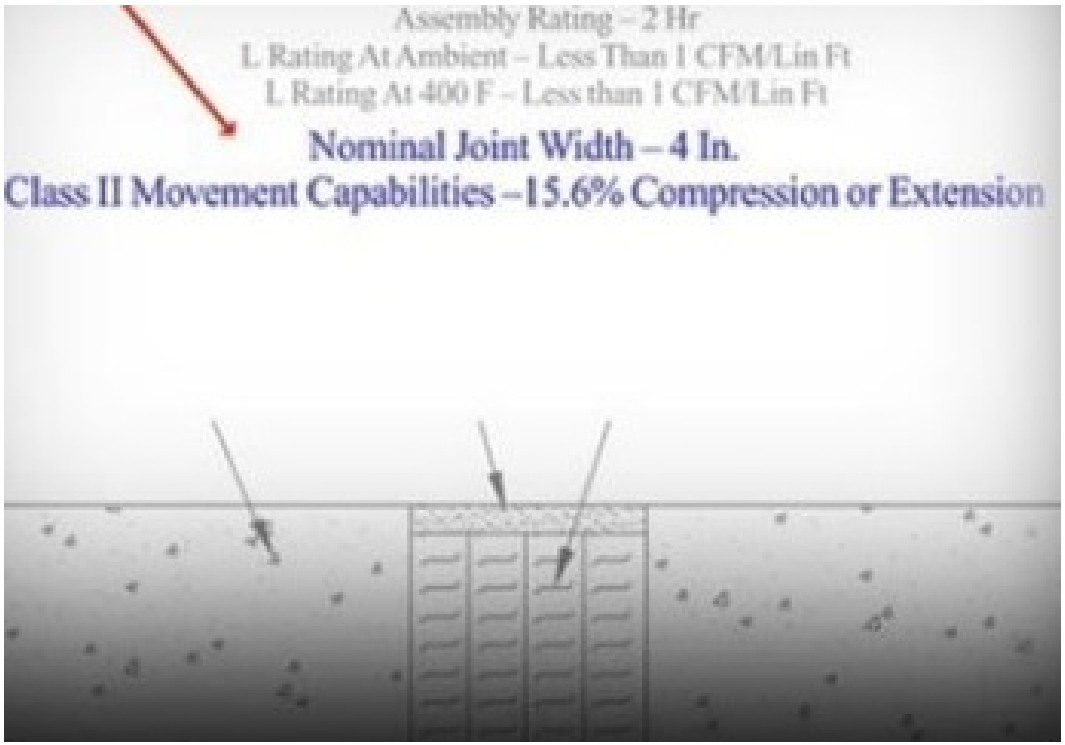
Fiberglass

AB/PVC Foam

Joint Width and Movement

What is the joint width and movement required?

A joint is a division of a building that allows independent movement of the building. Knowing the width and movement requirements of the joint are necessary to help choose the correct system detail.



Firestopping Technologies

Firestopping Technologies

There are many different penetration types in a building, and in most cases it takes more than one type of firestop product to handle all the specific applications. Let's turn our attention to the technologies that can be employed to provide firestop solutions.

This section explores the following individual technologies:

- Intumescent Technology
- Endothermic Technology
- Ablative Technology
- Insulative Technology

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Intumescent Technology

Intumescent firestopping materials are designed to expand when exposed to heat. Intumescent products will expand as much as 25 times in volume, forming a high-strength, insulating, fire-resistive char. This high-strength char is as important as the swelling action in that it allows the seal to resist the thermal and dynamic shocks of the actions that occur within a fire, including the fire suppression activities.

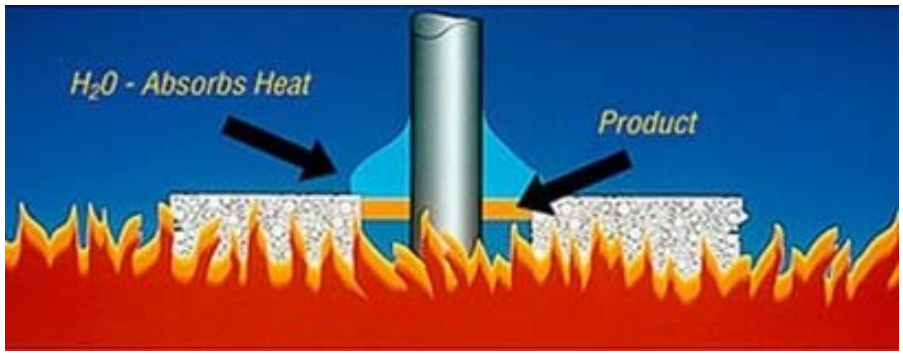
As fire intensifies, product expands and chars

Intumescent products can come in the form of sealants, putty, self-locking pillows, wrap strips, cast-in devices, or composite sheets. As these products are designed to expand when exposed to heat, they are ideal for construction applications such as plastic pipe, insulated pipe, cable bundles, and cable trays.

Endothermic Technology

Endothermic firestopping materials are designed to release chemically bound molecules of water when exposed to heat. As the temperature of a fire increases, it drives water out of the material in the form of steam that in turn provides a cooling effect and significantly retards heat transfer.

Endothermic products include mats used to protect through penetrations, electrical cable trays, structural steel, and emergency circuitry protection. A gypsum-based mortar will adhere to a range of construction substrates and penetrants; it acts as a heat sink, absorbing heat from penetrants and reducing the likelihood of combustible matter igniting on the unexposed side of the assembly.



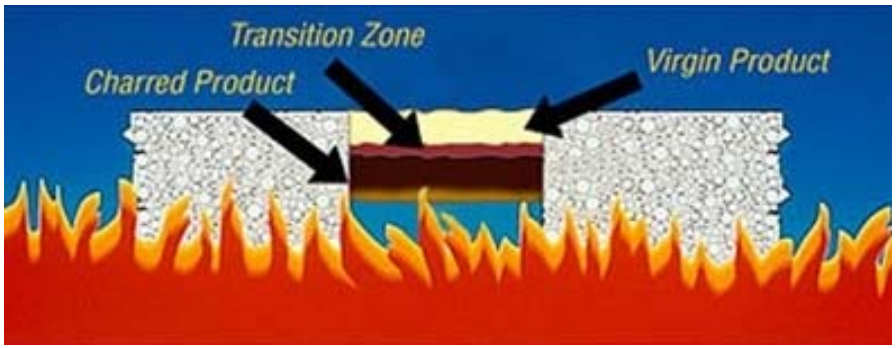
As fire intensifies, chemically bound water molecules are released

Ablative Technology

Ablative firestopping materials absorb heat and form a hard char with thermal insulation characteristics to help seal voids when exposed to heat. The charring acts as an insulative layer between the fire and the remainder of the firestopping product. Ablative firestopping materials often contain silicone.

Silicone sealants are used in firestopping through penetrations and fire-rated construction joints.

A water-tight sealant can offer the additional benefit of helping prevent the spread of water and moisture intrusion through floor penetrations.



As fire intensifies, a hard char with thermal insulation is formed

Insulative Technology

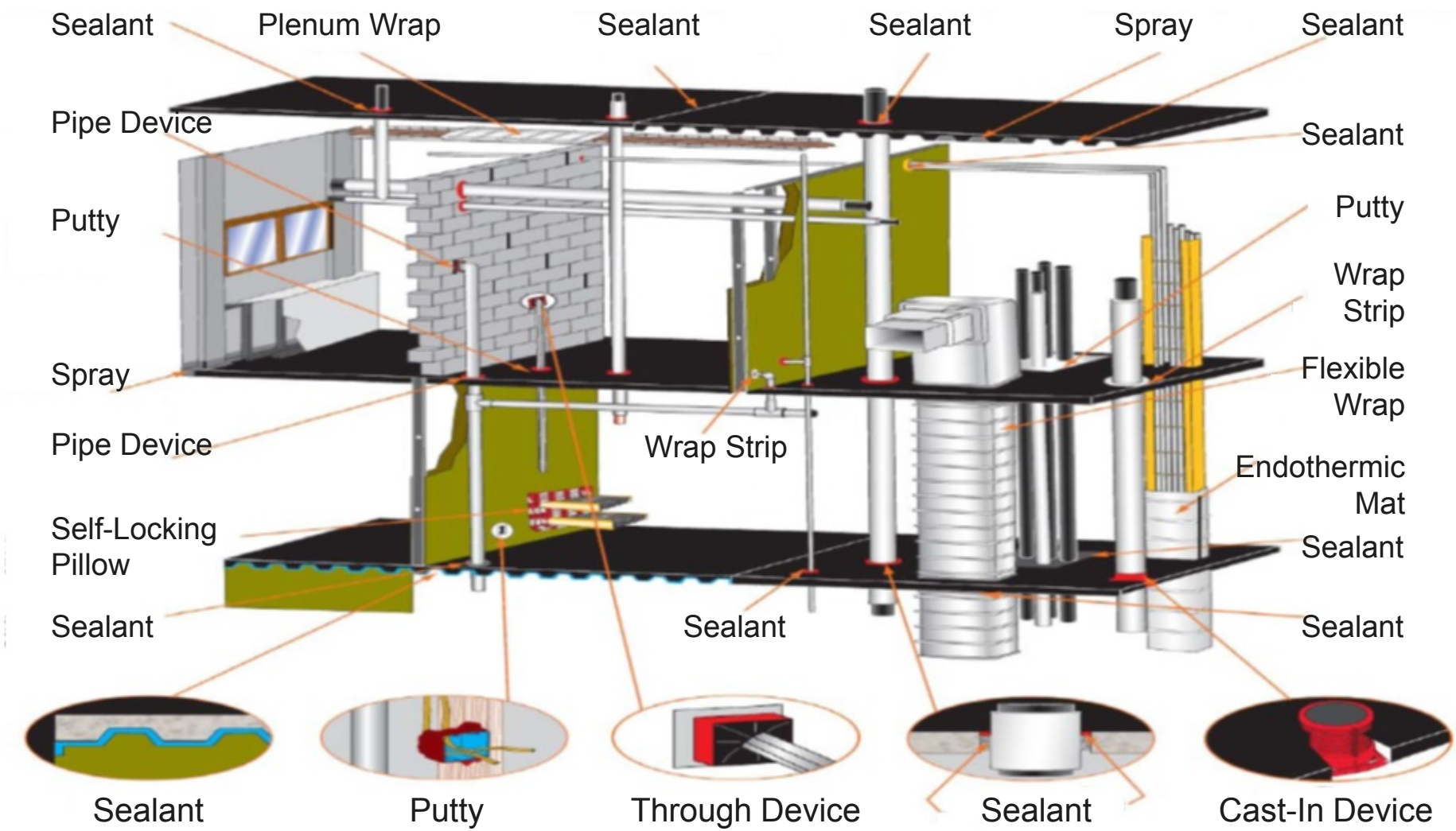
Insulative firestop products provide a barrier against heat and fire, thus helping to maintain and protect the assembly.

Plenum wraps and duct wraps are examples of insulative products. Insulative firestop products are used primarily to protect air, chemical, and grease ducts. They are also used to protect items in rated plenum areas.

Insulative products are typically foil-encapsulated, lightweight, and flexible for easy installation around angles. They protect against both internal and external fire conditions while maintaining the structural integrity of the duct.

Assembly is maintained and protected

Firestopping Needs Are Everywhere



Summary

Course Summary

A complete fire protection philosophy seeks to offer life safety, property protection, and continuity of operations. The best approach is a balanced mix of fire education and detection methods, as well as both active suppression and passive containment systems.

Passive firestop systems help prevent fire from spreading through openings in fire-rated construction created by gaps such as construction joints between walls or floors. These systems help restore the integrity of the fire-rated assemblies and protect lives and property against the spread of fire, smoke, and toxic gases.

Firestop systems are available for the different types of penetrations found in every building, including through penetrations, construction joints, ducts, and plenums. Products employ intumescent, endothermic, ablative, or insulative technology to offer protection as required for the specific application.

Firestop products do not receive ratings—systems that employ firestopping materials do. A fully tested firestop system that is listed by accredited third-party agencies will help limit the destructive power of fires in commercial construction.

Conclusion

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