FIRESTOPPING INSPECTION MANUAL

INSPECTOR POCKET GUIDE

Sixth Edition

IFC
ESTABLISHED 1990

INTERNATIONAL FIRESTOP COUNCIL

ICC PREFERRED EDUCATION PROVIDER

INSTALL

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SIXTH EDITION

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ESTABLISHED 1990

INTERNATIONAL FIRESTOP COUNCIL

THE Source of Firestop Expertise®

The following information is intended to provide construction and code enforcement professionals with basic checkpoints to ensure that the required fire resistance ratings are maintained when through penetrations and linear joints breach walls and floors.

This inspection guideline is not intended to be all encompassing or to be used as a design guide. It is for information and educational purposes only.

SCOPE

BUILDING CODE REQUIREMENTS

Construction codes have very clear requirements on passive fire protection. These requirements are included in Chapter 7 Fire and Smoke Protection Features of the International Code Council (ICC) International Building Code© (IBC©).

Whenever required by the IBC©, the fire resistance ratings of floors, walls, floor/ceiling, roof/ceiling assemblies or fire-resistance-rated duct enclosures must be restored when an opening is made to accommodate penetrations for mechanical, electrical, plumbing, communication systems and ventilation ducts, joints between floors, walls, floors and walls, etc, must also have the same fire resistance ratings as the adjacent construction.

NFPA 101 (Life Safety Code), NFPA 70 (National Electric Code), the International Mechanical Code© (IMC©) and the International Plumbing Code© (IPC©) also include provisions related to the protection of penetrations. The codes have explicit requirements for inspection of firestop systems before they are concealed.

The IBC requires that evidence be submitted to the building official showing that the materials and methods of construction used to protect penetrations, joints and ventilation ducts in fire resistance rated building elements shall not reduce the required fire resistance rating. The International Fire Code© has requirements for periodic inspection of firestop systems throughout the life of the building.

SCOPE

PLANS EXAMINATION / REVIEW

The authority having jurisdiction (AHJ) must review and approve firestop system details and rated duct enclosures. Hence, systems details and materials must be included on the plans and specifications. If details, products and specifications are not sufficient to provide clear directions to the general contractor and firestop installer, the submittals should be noted as incomplete and returned to the designer to be resubmitted with the required information. If the plans and specifications are clear and complete, most field problems with firestop systems can be avoided.

SCOPE

ENGINEERING JUDGMENTS

It is not unusual to find, in construction projects, unique conditions which have not been tested and listed, that require special consideration. The protection of these conditions will necessitate Engineering Judgments (EJ's) since they have not been tested and do not comply with a published design listing.

The International Firestop Council has published "Recommended IFC Guidelines for Evaluating Firestop Systems in Engineering Judgments" to assist designers, plan reviewers and inspectors in addressing nonconforming construction details. The plan submittals should always indicate which details are based on EJ's. The submitted EJ's need to be approved by the building official and made available to the field inspector when approved.

The following IFC guidelines for the evaluation of EJ's can be obtained from the IFC website: www.firestop.org:

- IFC Guidelines for Evaluating Engineering Judgments
- IFC Guidelines for Evaluating Engineering Judgments — Perimeter Fire Containment
- Recommended IFC EJ Guidelines — Duct

SCOPE

INSPECTION PROCESS

The time allocated for inspections can be drastically reduced if the proper paperwork is provided on the approved plans. Planning and communication between the building designer, structural engineer and the installer prior to construction will save time, costs and resources in assuring the application of the proper systems.

Inspection guidelines for Penetration Firestop systems (ASTM E2174) and Fire Resistive Joint systems (ASTM E2393) in fire resistance rated construction are available to provide construction and code enforcement professionals with basic checkpoints to ensure the required fire resistance ratings are maintained when penetrations and linear joints breach walls and floors. IBC section 1705.18 requires fire-resistant penetrations and joints in high-rise buildings, in buildings assigned to Risk Category III or IV, or in fire areas containing Group R occupancies with an occupant load greater than 250, to undergo special inspections for through-penetrations, membrane penetration firestop, fire-resistant joint systems and perimeter fire containment systems in accordance with these Standards.

Verification of system testing and listings with a nationally recognized laboratory, prior to installation in the field, is key to a smooth inspection process. Use of applicable ASTM practices will provide guidelines for inspection of installed systems.

SCOPE

FIELD INSPECTION PROCESS

The ability of penetration firestop systems, fire resistive joint systems and ventilation systems to perform their intended function of fire containment is directly related to the quality of their installations. Thorough inspection is an integral component of any passive fire protection quality control program. It is not realistic to visually inspect each penetration and the entire length of every joint and ventilation duct. How many inspections are enough? This is a judgment call by the inspector; however, the ASTM inspection standards may be used as a guideline.

Major elements of quality firestop inspections are:

- Firestop systems must not be concealed from view before being inspected and approved (IBC 110.1).
- Walk through visual inspections should be made during the rough and final inspections.
- When necessary or required, destructive evaluation will be made on various types of firestop systems.
- Appropriate tools for firestop inspections should include a flashlight, measuring device and cutting tool.
- Proper material depths, annular space, attachments, spacing and product type are critical to the effectiveness of the system.
- Construction documents detailing the firestop locations and systems must be kept on site to assist in the conduct of the inspection.
- Ensure to a reasonable degree that empty containers, wrappings or boxes of the specified materials are in sufficient quantity to have been installed correctly.
- Ensure to a reasonable degree that the actual products, containers, wrappings or boxes are labeled with the approved testing agency marks and are as specified in the submitted details.
- Measure the depth and width of materials as indicated in the details (sometimes density measurements are also required for products such as thermal insulation).
- Ensure to a reasonable degree that joints have been installed in such manner that the required movement can be achieved.
- Compare the installed firestop system with the approved submitted details.
- Ensure a reasonable degree of workmanship, which would indicate compliance with the specified design.

▶ STEP ONE

Verify the documents and submitted drawings reference tested and listed applicable through and membrane penetration assemblies containing sealants, devices and/or other materials tested to ASTM E814 or UL 1479 (In Canada — CAN/ULC S115) by accredited testing agencies. These systems should be published and readily available via the internet or other means.

▶ STEP TWO

Verify that the Through-Penetration System being used has been tested to the hourly rating necessary (ie. 1 hr., 2 hr., etc,) based on the type of assembly being penetrated.

▶ STEP THREE

As an overview of these steps, verify that the parameters indicated in the system are the same as those installed in the field: Is the through penetration system rated for the type and nature of assembly (thickness of concrete, stud width, etc.)?

A. Is the rating of the through penetration system equal or greater than the assembly penetrated?

B. Do the supplied products have labels from a recognized quality assurance agency?

C. Does the field installation follow the listing?

   a. For the size of opening prior to firestopping?

   b. For pipe conditions: Nature and quantity of penetrant(s), (material, size, diameter, insulation type and thickness, etc.)?

      For cable conditions: Allowable cable sizes, jacketing, spacing and bundle size or percent fill of opening (as listed)?

   c. Annular space requirements, (minimum, maximum, nominal, etc.)?

   d. Specified forming, packing or backing material, (when required)?

   e. Specified sealant, coating, device or firestopping product indicated, (type, amount, depth, location, etc.)?

   f. Specified accessory items, (anchors, fasteners, securing devices, plates, etc.)?

   g. Is an L Rating also required?

GUIDELINES

FOR FIRE RESISTIVE JOINT SYSTEMS:

▶ STEP ONE

Verify the documents and submitted drawings reference tested and listed fire resistive joint systems tested to ASTM E1966 or UL 2079 (In Canada — CAN/ULC S115) by accredited testing laboratories or certified third party testing agencies. These systems should be published or readily available via the internet or other means.

▶ STEP TWO

Verify the documents and submitted drawings have been reviewed by the Project Design Professional and/or the structural engineer and that they meet the allowable movement requirements.

▶ STEP THREE

Verify the documents and submitted drawings reference systems that have been tested for the required amount of movement. A system listing a nominal 1 inch joint width with 25% compression or extension, actually allows for a movement of 1/4" of compression and 1/4" of extension.

▶ STEP FOUR

Verify the rating of the joint system is equal to the rating of the assemblies it is connecting. The code requires that the rating of a joint system shall not be less than the fire resistive ratings of the adjacent assemblies.

GUIDELINES

OVERVIEW

As an overview of these steps, verify the parameters indicated in the system are the same as those installed in the field:

A. Is the joint system tested and listed?

B. Is the joint system tested for the amount of movement required?

C. Is the joint system tested for the class and type of movement required?

D. Is the fire rating of the joint equal to (or greater than) the assemblies it is adjacent to?

E. Observe the nominal installed width of the joint at the framing inspection.

F. If a mechanical system is used, are the specified tracks installed with a third party testing agency label attached?

G. Do the supplied products have labels from recognized quality assurance agency?

H. Does the field installation follow the listing?

   a. Specified forming, packing or backing material?

   b. Specified type of sealant, coating or device?

   c. Specified amount, depth, location of sealant, coating or device?

   d. Specified accessory items — cover plates, bond breaker tape, and specified deflection track?

   e. Is an L Rating also required?

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GUIDELINES

PERIMETER FIRE CONTAINMENT SYSTEMS FOR CURTAIN WALLS AND OTHER EXTERIOR WALL ASSEMBLIES

▶ STEP ONE

Verify the documents and submitted drawings reference tested and listed Perimeter Fire Containment Systems, tested to ASTM E2307 by accredited testing laboratories or certified third party testing agencies. These systems should be published or readily available via online or other means. Documents referencing only fire resistive joint systems should not be accepted for these applications.

▶ STEP TWO

Verify the rating of the system is greater than or equal to the rating of the floor. The continuity requirements within the building code state that the rating of a floor assembly must extend to and be tight against an exterior wall.

▶ STEP THREE

Verify that the firestop material to be used is classified and listed for use in Perimeter Fire Containment Systems. All other materials should not be used.

▶ STEP FOUR

Verify documents reference systems that have been tested with windows or vision glass if the building has glazing close to the safing area. Some systems were tested with glazing close to the safing area while other systems were for structures with limited glazing such as storage and warehouse facilities.

▶ STEP FIVE

Verify a stiff steel reinforcement member, if required, has been placed behind exposed curtain wall panel insulation. Typical stiffening members can be steel hat channels, “L” or “T” angles.

▶ STEP SIX

Verify insulation type and brand used is listed within the tested system. Mineral wool is the typical insulation of choice. If mineral wool is used it must be installed to the correct compression and according to the correct orientation.

▶ STEP SEVEN

If required by the tested system, verify insulation panels are securely fastened with mechanical fasteners per the listed system.

▶ STEP EIGHT

Verify that exposed mullions, if required by the system, are covered with the proper insulating barrier securely fastened with mechanical fasteners per the system design.

▶ STEP NINE

Verify safing clips or "Z" clips have been used if the system requires it.

▶ STEP TEN

Verify coating or sealant has been applied to the proper depth. A common inspection practice is to be on site just prior to the addition of the sealant to verify the correct application thickness is being followed and to verify correct orientation of mineral wool. The inspector may request samples from the installing contractor after which the installing contractor shall make the necessary repairs to the destructively sampled area. A scale or caliper is sufficient for measuring the sealant depth.

As an overview of the above steps, verify the parameters indicated in the system are the same as those installed in the field: (Download checklist form from the IFC web site at www.firestop.org).

A. Is the perimeter fire barrier system tested for the type and nature of assembly, (minimum thickness of concrete, transom spacing, etc.)?

B. Is the rating of the perimeter fire barrier system equal or greater than the floor assembly?

C. Do the supplied products have labels from a recognized quality assurance agency?

D. Does the field installation follow the listing?

   a. Width of gap between floor edge and curtain wall at time of installation.

   b. Design detail includes vision glass if applicable.

   c. Specified curtain wall spandrel insulation, (type, thickness, density, etc.).

   d. Specified spandrel panel perimeter angles, (gauge thickness, dimensions, fastener spacing).

   e. Specified framing and/or mullion covering, (type, thickness, density, etc).

   f. Support clips for safing insulation, if specified.

   g. Specified forming or safing insulation, (type, % compression, depth, etc).

   h. Specified sealant, coating, device or firestopping product, (type, depth, location).

GUIDELINES

FOR FIRE-RESISTANCE-RATED DUCT ENCLOSURE SYSTEMS

▶ STEP ONE

Verify the documents and submitted drawings reference legitimate fire resistive duct enclosure systems tested by accredited testing laboratories or certified third party testing agencies. These systems and insulation components should be listed, labeled, published and readily available via the internet or other means.

▶ STEP TWO

Verify the duct enclosure system is tested to the appropriate Standard for the specific type of duct system. Grease duct enclosure systems are tested and listed per ASTM E2336, UL 2221, HVAC duct enclosure systems are tested and listed per ISO 6944, ASTM E2816.

▶ STEP THREE

Verify the fire resistance rating of the duct enclosure system and corresponding firestop system are equal or greater than the required fire resistance ratings for the building construction assembly penetrated.

For grease ducts, the IMC requires the fire resistance rating of the duct enclosure system be at least equivalent to the surrounding building construction assembly penetrated. The F and T ratings for the corresponding duct firestop system must also be at least equivalent to the duct enclosure system and the surrounding assembly. For HVAC ducts, the stability, integrity and fire resistance rating of the duct enclosure system must be at least equivalent to the rating of the construction assembly penetrated.

▶ STEP FOUR

Verify the field installation is consistent with the parameters of the listing and therefore compliant.

A. **Duct System Type** — kitchen grease exhaust, hazardous exhaust, ventilation, etc.

B. **Duct Construction** — dimensions, material, gauge, reinforcement, connections, vertical or horizontal orientation.

C. **Enclosure System** — labeled components, number of layers, fire rating, required clearance to combustibles, thickness and density of material, material joints (overlap of material, taping of cut edges or seams), etc.

D. **Enclosure System Attachment** — mechanical method of attachment to duct (typically steel banding and/ or capacitor discharge insulation pins), components, spacing, gauge, etc.

E. **Duct Supports** — hanger system components, frequency of location, clearance to enclosure system, protection requirements.

F. **Access Door** — field fabricated or prefabricated door construction and protection with enclosure system material must match design listing.

G. **Firestop System** — refer to design listing for fire rated assembly construction, annular space, packing material type and depth, and firestop material type and depth.

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GUIDELINES

APPLICABLE STANDARDS: PLAN REVIEW AND INSPECTION GUIDELINES FOR FIRESTOP SYSTEMS

Standards relevant to Firestop Systems:

- **ASTM E814** Standard Test Method for Fire Tests of Penetration Firestop Systems
- **ASTM E1399** Standard Test Method for Cyclic Movement and Measuring the Minimum and Maximum Joint Widths of Architectural Joint Systems
- **ASTM E1966** Standards Test Method for Fire-Resistive Joint Systems
- **ASTM E2174** Standard Practice for On-Site Inspection of Installed Fire Stops
- **ASTM E2307** Standard Test Method for Determining the Fire Resistance of Perimeter Fire Containment Systems Using the Intermediate Scale, Multi-Story Test Apparatus
- **ASTM E2336** Standard Test Methods for Fire Resistive Grease Duct Enclosure Systems
- **ASTM E2393** Standard Practice for On-Site Inspection of Installed Fire Resistive Joint System and Perimeter Fire Barriers
- **ASTM E2750** Standard Guide for Extension of Data from Penetration Firestop System Tests Conducted in Accordance with ASTM E814
- **ASTM E2837** Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies
- **ASTM E2816** Standard Test Methods for Fire Resistive Metallic HVAC Duct Systems
- **ASTM E2874** Standard Test Method for Determining the Fire-Test Response Characteristics of a Building Spandrel-Panel Assembly Due to External Spread of Fire
- **ASTM E3157** Standard Guide for Understanding and Using Information Related to Installation of Firestop Systems
- **ASTM E3385** Standard Practice for On-Site Inspection of Fire Resistive Duct Systems
- **CAN/ULC-S115** Standard Method of Fire Tests of Firestop Systems
- **CAN/ULC-S144** Standard Method of Fire Resistance Test – Grease Duct Assemblies
- **ICC ES AC179** Acceptance Criteria for Metallic HVAC Duct Enclosure Assemblies
- **ISO 6944** Fire containment — Elements of building construction — Part 1: Ventilation ducts
- **UL 1479 U**L Standard for Fire Tests of Penetration Firestops
- **UL 2079 UL** Standard for Safety Tests for Fire Resistance of Building Joint Systems
- **UL 2221** UL Standard for Safety Tests of Fire Resistive Grease Duct Enclosure Assemblies

CODES

ABOUT THE INTERNATIONAL CODE COUNCIL

The International Code Council is the leading global source of model codes and standards and building safety solutions that include product evaluation, accreditation, technology, codification, training and certification. The Code Council's codes, standards and solutions are used to ensure safe, affordable and sustainable communities and buildings worldwide. The International Code Council family of solutions includes the ICC Evaluation Service, the International Accreditation Service, General Code, S. K. Ghosh Associates, NTA Inc., Progressive Engineering Inc., ICC Community Development Solutions and the Alliance for National & Community Resilience. The Code Council is the largest international association of building safety professionals and is the trusted source of model codes and standards, establishing the baseline for building safety globally and creating a level playing field for designers, builders and manufacturers.

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DIRECTORIES

THIRD PARTY TESTING AGENCIES: INDEPENDENT TESTING LABORATORIES

There are several independent testing laboratories, also referred to as third party testing agencies, which conduct the fire testing of firestop, perimeter fire barrier and duct enclosure systems. The fire test results are usually included as design listings in the fire resistance directories published by the testing laboratory. These Directories are an important source of information during the plan review process and inspection process. The following are some of the recognized independent laboratories conducting tests of firestop systems:

FM APPROVED

Factory Mutual
Norwood, MA
(781) 762-4300
www.fmglobal.com

SwRI

Southwest Research Institute
San Antonio, TX
(210) 522-2311
www.fire.swri.org

ES ICC EVALUATION SERVICE®

ICC-ES
Bryan,TX
(979) 487-2350
www.icc-es.org

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Intertek Testing Services
San Antonio, TX
(210) 635-8100
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UL Solutions in Canada
Toronto, ON
(866) 937-3852
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NOMENCLATURE

NOMENCLATURE

UL DESIGN NUMBERING

PENETRATIONS

CCN FIRST ALPHA CHARACTER	
Letter	**Description**
C	Either floors or walls
F	Floors
W	Walls

CCN SECOND, THIRD ALPHA CHARACTERS	
Letter	**Description**
A	Concrete floors 5" or less
B	Concrete floors over 5"
C	Framed floors
E	Floor-ceiling assemblies w/ concrete floor
G	CLT Floor assemblies
J	Concrete block wall 8" or less
K	Concrete block wall over 8"
L	Framed walls
N	Composite panel walls
O	CLT wall assembly

NUMERIC CHARACTERS	
Numeric Range	**Description**
0000 - 0999, 01000, 01001, 01002 etc.	Blanks
1000 - 1999, 11000, 11001, 11002 etc.	Metallic pipes
2000 - 2999, 21000, 21001, 21002 etc.	Nonmetallic pipes
3000 - 3999, 31000, 31001, 31002 etc.	Cables
4000 - 4999, 41000, 41001, 41002 etc.	Cable trays
5000 - 5999, 51000, 51001, 51002 etc.	Insulated pipes
6000 - 6999, 61000, 61001, 61002 etc.	Misc. electrical penetrants
7000 - 7999, 71000, 71001, 71002 etc.	Misc. mechanical penetrants
8000 - 8999, 81000, 81001, 81002 etc.	Combinations

JOINTS

CCN FIRST, SECOND ALPHA CHARACTERS	
Letter	**Description**
FF	Floor - to Floor
WW	Wall - to - Wall
FW	Floor - to - Wall
HW	Head - of - Wall
BW	Bottom - of - Wall
CG	Corner guards
CJ	Continuity head - of - wall
CW	Perimeter fire containment systems

CCN THIRD ALPHA CHARACTER	
Letter	**Description**
D	Dynamic joint movement
S	Static joint

NUMERIC CHARACTERS	
Numeric Range	**Description**
0000 0999. 01000 - 01999	Less than or equal to 2 in.
1000 - 1999, 11000 - 11999	Greater than 2 1n. and less than or equal to 6 in.
2000 - 2999, 21000 - 21999	Greater than 6 in. and less than or equal to 12 in.
3000 - 3999, 31000 - 31999	Greater than 12 in. and less than or equal to 24 in.
4000 4999, 41000 - 41999-	Greater than 24 in.

FIRE RESISTANCE RATED DUCT SYSTEMS

FIRE RESISTANCE RATED DUCT	
Category Control Number (CCN)	**Description**
HNKT	Grease duct assemblies
HNLJ	Ventilation duct assemblies

INTERTEK DESIGN NUMBERING

AAA/BBB-CCC-DD

- **AAA** = Manufacturer identifier by initials
- **BBB** = System type derived from CSI Code
- **CCC** = Rating duration in minutes
- **DD** = Sequence number for multiple design listings of the same manufacturer, system type, and rating duration

05 50 00 Metal Fabrications 05 58 00 Formed Metal Fabrications	
System Abbreviations Include	
FMF	Formed Metal Fabrications

07 00 00 Thermal and Moisture Protection 07 20 00 Thermal Protection 07 21 00 Thermal Insulation	
System Abbreviations Include	
BI	Blanket Insulation
FBI	Foam Board Insulation
FBI	Fibrous Board Insulation
MBI	Mineral Board Insulation
MFF	Mineral-Fiber Fireproofing

07 80 00 Fire and Smoke Protection 07 81 00 Applied Fireproofing	
System Abbreviations Include	
AF	Applied Fireproofing
CF	Cementitious Fireproofing
IF	Intumescent Fireproofing

07 84 00 Firestopping	
System Abbreviations Include	
PF	Penetration Firestopping
PFM	Penetration Firestopping Mortars
PFD	Penetration Firestopping Devices
JF	Joint Firestopping
BPF	Building Perimeter Firestopping
Legacy Abbreviations Include	
PH	Penetrant Horizontal
PHV	Penetrant Horizontal & Vertical
PV	Penetrant Vertical
IS	Joint Sealants
PFB	Perimeter Fire Barrier
BP	Building Perimeter
FS XXX F	Firestopping, Floor
FS XXX W	Firestopping, Wall
CEJ XXX D	Construction/Expansion Joint, Perimeter

07 95 00 Expansion Control	
System Abbreviations Include	
EC	Expansion Control
EJCA	Expansion Joint Cover Assemblies
Legacy Abbreviations Include	
EJH	Expansion Joint, Horizontal
EJV	Expansion Joint, Vertical

08 31 00 Access Doors and Panels 23 00 00 Heating, Ventilating, and Air Conditioning (HVAC) 23 35 00 Special Exhaust Systems 23 35 33 Listed Kitchen Ventilation Exhaust System	
System Abbreviations Include	
DI	Duct Insulation
Legacy Abbreviations Include	
FRD	Grease Duct Protection
CED XXX F	Chemical Fume Duct
GD XXX F	Grease Duct Protection
PP xXx P	Plenum Protection System
VAD XXX F	Ventilation Duct Protection

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FIRESTOPPING

BUILDING & SAFETY CODES:

INTERNATIONAL BUILDING CODE (IBC) 2024 EDITION	
107.2.2	Submittal Fire Shop Drawings
110.3.8	Fire and Smoke penetrations inspection
202	Definitions Fire-Resistant Joint Through-Penetration Firestop System
705.5	Exterior Wall Fire-Resistance rating
705.10	Exterior Wall Joints
706.5	Fire Walls Horizontal continuity
709.6	Smoke Barrier Penetrations (see Section 714)
706.9	Fire Wall Penetrations (see Section 714)
706.10	Fire Wall Joints (see Section 715)
707.5	Fire Barrier continuity
707.7	Fire Barrier Penetrations (see Section 714)
707.8	Fire Barrier Joints (see Section 715)
708.7	Fire Partitions Penetrations (see Section 714)
708.8	Fire Partitions Joints (see Section 715)
709.3	Smoke Barrier 1 Hour Fire-resistance rated
709.4	Smoke Barrier continuity
709.6	Smoke Barriers Penetrations (see Section 714)
709.7	Smoke Barrier Joints (see Section 715)
710.6	Smoke Partition Penetrations “approved material”
710.7	Smoke Partition Joints “approved material”
711.2.2	Continuity of Horizontal Assemblies
711.2.4	Horizontal Assembly Fire Resistance Ratings
711.3	Non-Fire Resistance Rated floor assemblies (see 712)
711.3.2	Non-rated floor and roof continuity
712.1.4	Vertical Openings - Penetrations (Section 714)
712.1.5	Vertical Openings - Joints (Section 715)
712.1.5.2	Joints in/between non-FRR Floor Assemblies (Approved Material)
713.8.1	Membrane Penetrations in Shafts (see 714.4.2)
713.9	Joints in Shafts (see 715)
714	**Penetrations**
714.4.1.2	ASTM E-814 or UL1479
714.4.2	Membrane Penetrations
714.4	Through Penetrations in Vertical Assemblies
714.5.1.2	Through-Penetrations E-814 or UL1479 requires F&T In Floors
714.4.1.2	Wall Penetrations required F rating
714.4.2	Membrane Penetrations in Vertical Assemblies
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715.7	Exterior Curtain Wall/Vertical Fire Barrier Intersections
715.8	Exterior Curtain Wall Spandrels
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NOTE: section references will vary for different year editions

NFPA 101, “LIFE SAFETY CODE”; 2024 EDITION	
4.6.12	Maintenance, Inspection and Testing of Fire Resistance Rated Assemblies and Components
8.3.4	**Penetrations**
8.3.4.2.2	Penetration firestops tested to ASTM E814
8.3.4.7	Membrane Penetrations in Fire Barriers
8.3.5	Joints between/in Fire Barriers
8.3.5.2	Joint System Requirements for Fire Barriers
8.3.5.3	Joints in/between Fire Barriers and non-FRR Roof, Slab or Deck (continuity head-of-wall systems)
8.3.5.4	Exterior Curtain Walls and Perimeter Joints
8.4.2	Continuity of Smoke Partitions
8.4.4	Penetrations in Smoke Partitions
8.5.2	Smoke Barrier Continuity
8.5.6	Penetrations in Smoke Barriers
8.5.6.5	Smoke Through Penetrations in Smoke Barriers (L Ratings)
8.5.7	Joints in Smoke Barriers
8.5.7.2	Smoke Through Joints in Smoke Barriers (L Ratings)

NOTE: section references will vary for different year editions

ABOUT THE INTERNATIONAL FIRESTOP COUNCIL

The International Firestop Council (IFC) is a nonprofit association of manufacturers, distributors, installers, inspectors and other key stakeholders interested in passive fire protection materials and systems in North America and abroad. With over thirty years members' experience, a constant stream of innovation and over ten thousand tested systems, we are **THE source of firestop expertise.**

The IFC provides impartial and broad-based education, information, resources, affiliation, and procedures regarding firestop system selection, performance, installation and inspection to the construction and code-enforcement communities.

The International Firestop Council developed the first comprehensive Firestop Special Inspection education and certificate program. This allows construction inspectors from all of the hundreds of jurisdictions throughout the US, and in foreign countries also referencing the IBC, to have access to the technical information required for a comprehensive understanding of firestopping, the program was designed as a self-education program using resources that can all be accessed online. All except the required ASTM standards can be accessed at no cost. The self-education reading and video list consists of the most critical and important information sources on firestopping.

Learn more at **www.firestop.org**

NOTES

ICC DIGITAL CODES PREMIUM®

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Go Digital, Work Smarter with Premium Complete

ICC's Digital Codes Premium is the most trusted and authentic source of model codes and standards, which conveniently provides access to the latest code text from across the United States.

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- **Saved Search** allows users to save search criteria for later use without re-entering.
- **Organize Notes** and thoughts by adding personal notes, files or videos into relevant code sections.
- **Copy, Paste, Print or PDF** any code section.
- **Share Access** by configuring your license to share access and content simultaneously with others (code titles, section links, bookmarks and notes).
- **Highlight and Annotate** any code book content to keep you organized.
- **Advanced Search** narrows down your search results with multiple filters to identify codes sections more accurately.
- **Bookmark** and tag any section or subsection of interest.

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