



The Nitty Gritty of the 07 84 00 Firestop Spec

UNDERSTANDING FIRESTOPPING REQUIREMENTS IN THE
CONSTRUCTION DOCUMENTS

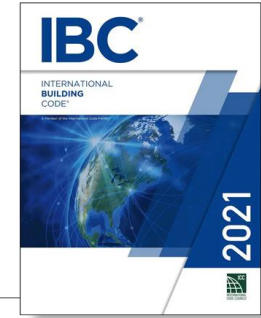
Objectives

1. Recognize conditions where firestopping is required by the building code.
2. Interpret building code requirements applicable to firestopping.
3. Identify the locations where firestopping requirements should be located/found in the contract documents.
4. Interpret the contract documents to determine the scope of firestopping.
5. Describe the benefits of requiring experienced firestopping installers on a project.



Building Code Requirements

WHERE IT ALL BEGINS

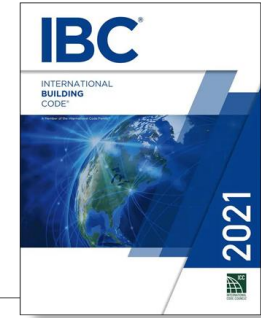


Fire-Resistive Assemblies

There are five different fire-resistive assemblies:

- Fire walls 2 to 4 hours
- Fire barriers 1 to 4 hours
- Fire partitions 1 hour
- Smoke barriers 1 hour
- Smoke partitions 0 hours
- Horizontal assemblies 1 to 3 hours

Fire-resistance-rated walls, ceilings, or roofs that have protected openings to restrict the spread of fire

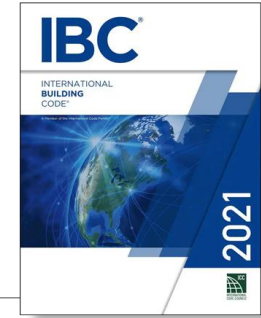


Fire-Resistive Construction

There are two types of fire-resistive construction:

- Exterior walls
 - Openings are only required to be protected if a wall is required to be fire-resistance-rated and openings exceed the allowable area for unprotected openings
 - Openings include joints and penetrations
- Interior bearing walls
 - Openings, including joints and penetrations, are not required to be protected

Fire-resistance-rated walls, ceilings, or roofs that are required to be protected per IBC Tables 601 and 705.5



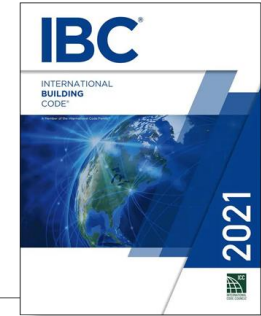
IBC Section 714 – Penetrations

Two Main Locations for Requirements:

- Section 714.4 – Requirements for fire-resistance-rated walls
- Section 714.5 – Requirements for horizontal assemblies

Two Options:

- Use assemblies as tested per ASTM E814 or UL 1479
 - Walls: F-rating equal to or greater than the fire-resistance rating of the wall assembly
 - Membrane Penetrations other than Electrical Boxes: F- and T-ratings \geq rating of wall
 - Horizontal Assemblies: F- and T-ratings not less than one hour, but not less than the rating of the floor
- Use assemblies as tested in the approved fire-resistance-rated assembly



IBC Section 714 – Penetrations

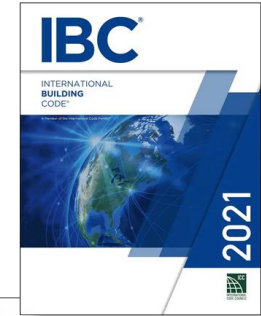
Two Main Locations for

- Section 714.4 – Requirements for fire-rated walls
- Section 714.5 – Requirements for fire-rated assemblies

“Standard Test Method For
Fire Tests Of Penetration
Firestop Systems”

Two Options:

- Use assemblies as tested per **ASTM E814** or **UL 1479**
 - Walls: F-rating equal to or greater than the fire-resistance rating of the wall assembly
 - Membrane Penetrations other than Electrical Boxes: F- and T-ratings \geq rating of wall
 - Horizontal Assemblies: F- and T-ratings not less than one hour, but not less than the rating of the floor
- Use assemblies as tested in the approved fire-resistance-rated assembly



IBC Section 714 – Penetrations

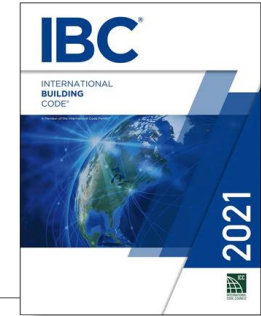
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“Standard For Fire Tests Of Penetration Firestops”

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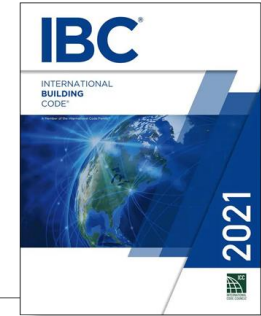
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 - Horizontal Assemblies: F- and T-ratings not less than one hour, but not less than the rating of the floor
- Use assemblies as tested in the approved fire-resistance-rated assembly



IBC Section 714 – Penetrations

Smoke Barriers (§ 714.5.4):

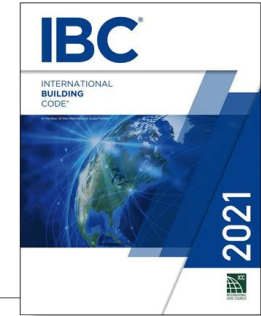
- Firestop systems tested for air leakage per UL 1479
- L-Rating: Comply with one of the following...
 1. 5.0 cfm per square foot of penetration opening for each through-penetration firestop system
 2. Total cumulative leakage of 50 cfm for any 100 square feet of wall or floor area.



IBC Section 714 – Penetrations

Non-Fire-Resistance Rated Floor & Floor/Ceilings (§ 714.6):

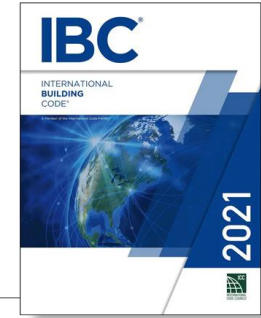
- Noncombustible Penetrating Items:
 - Connect not more than 5 stories
 - Annular space filled to resist the free passage of flame and products of combustion with:
 - An *approved* noncombustible material; or,
 - A tested through-penetration firestop system
- Any Penetrating Items:
 - Connect not more than 2 stories
 - Annular space filled with an *approved* material to resist the free passage of flame and products of combustion



IBC Section 715 – Joints and Voids

Section 715.3 – Fire-Resistance-Rated Assembly Intersections

- Applies to joints in or between fire-resistance-rated walls, floors or floor/ceiling assemblies, and roofs or roof/ceiling assemblies
- Protected by an *approved* fire-resistant joint system
- Firestop rating must be equal to or greater than the rating of the fire-resistance-rated assemblies

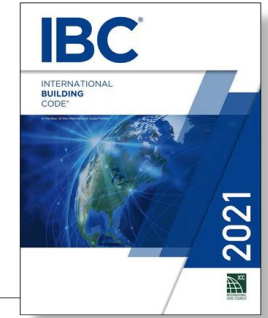


IBC Section 715 – Joints and Voids



Section 715.4 – Exterior Curtain Wall/Fire-Resistance-Rated Floor Intersections

- Protected by an *approved* perimeter fire containment system per **ASTM E2307** “Standard Test Method For Determining Fire Resistance Of Perimeter Fire Barriers Using Intermediate-Scale, Multi-Story Test Apparatus”
- F-rating equal to or greater than the floor or floor/ceiling assembly



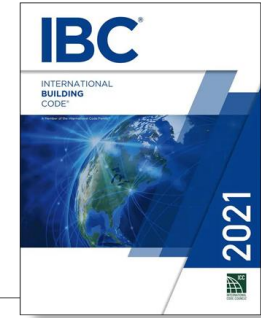
IBC Section 715 – Joints and Voids

Voids at the intersection of exterior curtain wall assemblies and the following are required to be filled with an *approved* material or system to retard the interior spread of fire and hot gases:

- Nonfire-resistance-rated floor or floor/ceiling assemblies (§ 715.5)
- Fire barriers (§ 715.6)

Joints in smoke barriers must use systems with L-ratings of not more than 5 cfm/ft. at 0.30 inches water per UL 2079

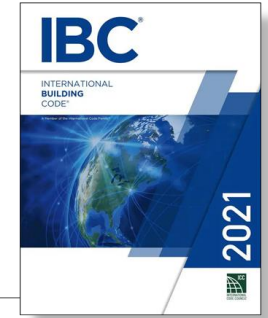
IBC Section 717 – Ducts and Air Transfer Openings



Section 717.1.2 – Ducts that Penetrate Fire-Resistance-Rated Assemblies **Without Dampers**

- Walls: Comply with Sections 714.3 through 714.4.3 for through- and membrane-penetrations
- Horizontal Assemblies: When not enclosed in a shaft, comply with Sections 714.5 through 714.6.2 for through- and membrane-penetrations
- Nonfire-Resistance-Rated Floor Assemblies:
 - Combustible Floors: Connect not more than two stories with annular space filled
 - Noncombustible Floors: Connect not more than three stories with annular space filled

IBC Section 1705 – Required Special Inspections and Tests



Section 1705.18 – Fire-Resistant Penetrations and Joints

- Applicable to the following types of buildings:
 - High-rise buildings
 - Buildings in Risk Categories III and IV
 - Group R occupancies with occupant loads > 250
- Special inspections must be conducted by an *approved agency* in accordance with the following:
 - Penetration Firestops: Per **ASTM E2174** “Standard Practice For On-Site Inspection Of Installed Firestops”
 - Fire-Resistant Joint Systems: Per **ASTM E2393** “Standard Practice For On-Site Inspection Of Installed Fire Resistive Joint Systems And Perimeter Fire Barriers”

Selecting Firestop Assemblies

Things you need to know before selecting a firestop system:

- What is the type of fire-resistance-rated assembly?
- What is the fire-resistance rating of the assembly?
 - What is the required F-rating (for walls and horizontal assemblies)?
 - What is the required T-rating (for horizontal assemblies and membrane penetrations)?
- Is an L-rating required (for smoke barriers)?
- What is the penetrating item?

NOTE: Refer to Chapter 2 of the *FCIA Firestop Manual of Practice* for a detailed discussion.

Selecting Firestop Assemblies (cont.)

Things you need to know before selecting a firestop system:

- What is the opening size?
- What is the opening shape?
- What is the maximum width for joints, perimeter fire containment, and other gaps?
- What is the construction of the fire-resistance-rated assembly?
- What is the thickness of the fire-resistance-rated assembly?

NOTE: Refer to Chapter 2 of the *FCIA Firestop Manual of Practice* for a detailed discussion.

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REFINE RESULTS

Build or filter your results by keyword and/or adding criteria like document type, file number and country name.

Search Template Firestop Systems

Keyword
Filter by Keyword Search

System Number
Click to view and filter values

Through-Penetration Firestop System Assembly Type
Click to view and filter values

Firestop System
Click to view and filter values

Penetrating Item
Click to view and filter values

F Rating
Click to view and select a range of values

T Rating
Click to view and select a range of values

L Rating
Click to view and filter values

W Rating
Click to view and filter values

M Rating
Click to view and filter values

Company Name
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Add Filter

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7594 Results :: Base Template: Firestop Systems :: No Search Criteria

Action Display: General

Document Name	Company Name	Notes	UL CCN Description
XHEZ_F-A-4026	ARMACELL GMBH		Through-penetration Firestop Systems
XHEZ_C-AJ-0003	Nelson Firestop Applica Consumer Products Inc GE Appliances 3M COMPANY DGS STORE FIXTURES INC		Through-penetration Firestop Systems
XHEZ_C-AJ-0004	3M COMPANY		Through-penetration Firestop Systems
XHEZ_C-AJ-0005	RECTORSEAL		Through-penetration Firestop Systems
XHEZ_C-AJ-0006	SPECIFIED TECHNOLOGIES INC MOMENTIVE PERFORMANCE MATERIALS		Through-penetration Firestop Systems
XHEZ_C-AJ-0007	3M COMPANY		Through-penetration Firestop Systems
XHEZ_C-AJ-0008	3M COMPANY		Through-penetration Firestop Systems
XHEZ_C-AJ-0009	3M COMPANY		Through-penetration Firestop Systems
XHEZ_C-AJ-0010	Nelson Firestop		Through-penetration Firestop Systems
XHEZ_C-AJ-0011	TREMCO INC		Through-penetration Firestop Systems
XHEZ_C-AJ-0012	RECTORSEAL		Through-penetration Firestop Systems
XHEZ_C-AJ-0013	PRC-DESOTO INTERNATIONAL INC		Through-penetration Firestop Systems
XHEZ_C-AJ-0014	SPECIFIED TECHNOLOGIES INC		Through-penetration Firestop Systems
XHEZ_C-AJ-0015	SPECIFIED TECHNOLOGIES INC		Through-penetration Firestop Systems
XHEZ_C-AJ-0021	CSL SILICONES INC		Through-penetration Firestop Systems

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All Search...

Coatings and Firestopping | Firestopping | Wall & Floor Penetration Fire Stops

1152 Results [Print](#) [Share](#) [Save](#) |< < 1 - 25 of 1152 > > 25

+ Product	Company	Category	Listing Country	Cert #
+ Type MW-300 Mineral Wool Batt Insulation	NUCO Inc	Wall & Floor Penetration Fire Stops	Canada	
+ SL-100 Self-Leveling Firestop Sealant	NUCO Inc	Wall & Floor Penetration Fire Stops	Canada	
+ FB-1000 NS Firestop Sealant	3M Co (The)	Wall & Floor Penetration Fire Stops	United States of America	
+ FB-1003 SL Firestop Sealant	3M Co (The)	Wall & Floor Penetration Fire Stops	United States of America	
+ FB-1003 SL Firestop Sealant	3M Co (The)	Wall & Floor Penetration Fire Stops	United States of America	
+ CFS-IS P High Performance Intumescent Firestop Sealant	Hilti Inc.	Wall & Floor Penetration Fire Stops	United States of America	
+ FB-1003 SL Firestop Sealant	3M Co (The)	Wall & Floor Penetration Fire Stops	United States of America	
+ FB-1000 NS Firestop Sealant	3M Co (The)	Wall & Floor Penetration Fire Stops	United States of America	
+ GG-200 Gun-Grade Firestop Sealant	NUCO Inc	Wall & Floor Penetration Fire Stops	Canada	
+ FB-1003 SL Firestop Sealant	3M Co (The)	Wall & Floor Penetration Fire Stops	United States of America	
+ 3M Fire Barrier MPP+ Moldable Putty Pads, 3 M Fire MP+ Stix	3M Co (The)	Wall & Floor Penetration Fire Stops	United States of America	
+ FB-1003 SL Firestop Sealant	3M Co (The)	Wall & Floor Penetration Fire Stops	United States of America	
+ FB-1000 NS Firestop Sealant	3M Co (The)	Wall & Floor Penetration Fire Stops	United States of America	
+ Metacaulk® 1000 Firestopping Sealant	RectorSeal, LLC	Wall & Floor Penetration Fire Stops	United States of America	
+ FB-1003 SL Firestop Sealant	3M Co (The)	Wall & Floor Penetration Fire Stops	United States of America	
+ GG-200 Gun-Grade Firestop Sealant	NUCO Inc	Wall & Floor Penetration Fire Stops	Canada	
+ FB-1003 SL Firestop Sealant	3M Co (The)	Wall & Floor Penetration Fire Stops	United States of America	
+ Biostop™ Pipe Collar	RectorSeal, LLC	Wall & Floor Penetration Fire Stops	United States of America	
+ Biostop™ Fire Rated Putty Sticks	RectorSeal, LLC	Wall & Floor Penetration Fire Stops	United States of America	
+ Type MW-300 Mineral Wool Batt Insulation	NUCO Inc	Wall & Floor Penetration Fire Stops	Canada	

Intertek Directory of Building Products

Search and view information on the Directory of Building Products, including Product Listings, Code Compliance Research Reports (CCRRs), Certificates of Compliance (COCs), Quality Assurance, and Industry Programs.

Country: Nothing selected
 Company: Nothing selected
 Listing Category: FIRESTOP SYSTEMS
 CSI Code: Nothing selected
 Standard: ASTM E814
 Program: Nothing selected
 Keywords: _____ Spec ID: _____
 CCRR #: _____ COC #: _____
 Trade/Brand Name: _____ Design Document: _____

Limit results to listings with code compliance research reports (CCRRs)
 Limit results to listings with certificates of compliance (COCs)

SEARCH RESET

Company	Listed Product	Spec ID	Standard	More
3M Company	3M Fire Barrier Duct Wrap 615	29728	ASTM E814 (2006); ASTM E814 (2011a); ASTM E814 (2013a); CAN / ULC S115 (2011); ISO 6944 (1985)	COC #: WH113 - 20265304 Design Document: View all on listing
3M Company	3M Fire Barrier Duct Wrap 615+	29729	ASTM C518 (2004); ASTM C518 (2010); ASTM E119 (2008a); ASTM E119 (2010); ASTM E119 (2010b); ASTM E119 (2012); ASTM E136 (2004); ASTM E136 (2008)	COC #: WH113 - 20265303 Design Document: View all on listing

HAVE A QUESTION?
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 bpcerthelpdesk@intertek.com

Building & Construction Services

- Product Directories
- SpecDIRECT
- Certification
- Product Certification
- CCRR
- Building and Construction
- Fire Door Categories

Intertek Warnock Hersey Mark
 Intertek ETL Listed Mark

Intertek Directory of Building Products: Firestop System Listing Search



Firestopping & the Construction Documents

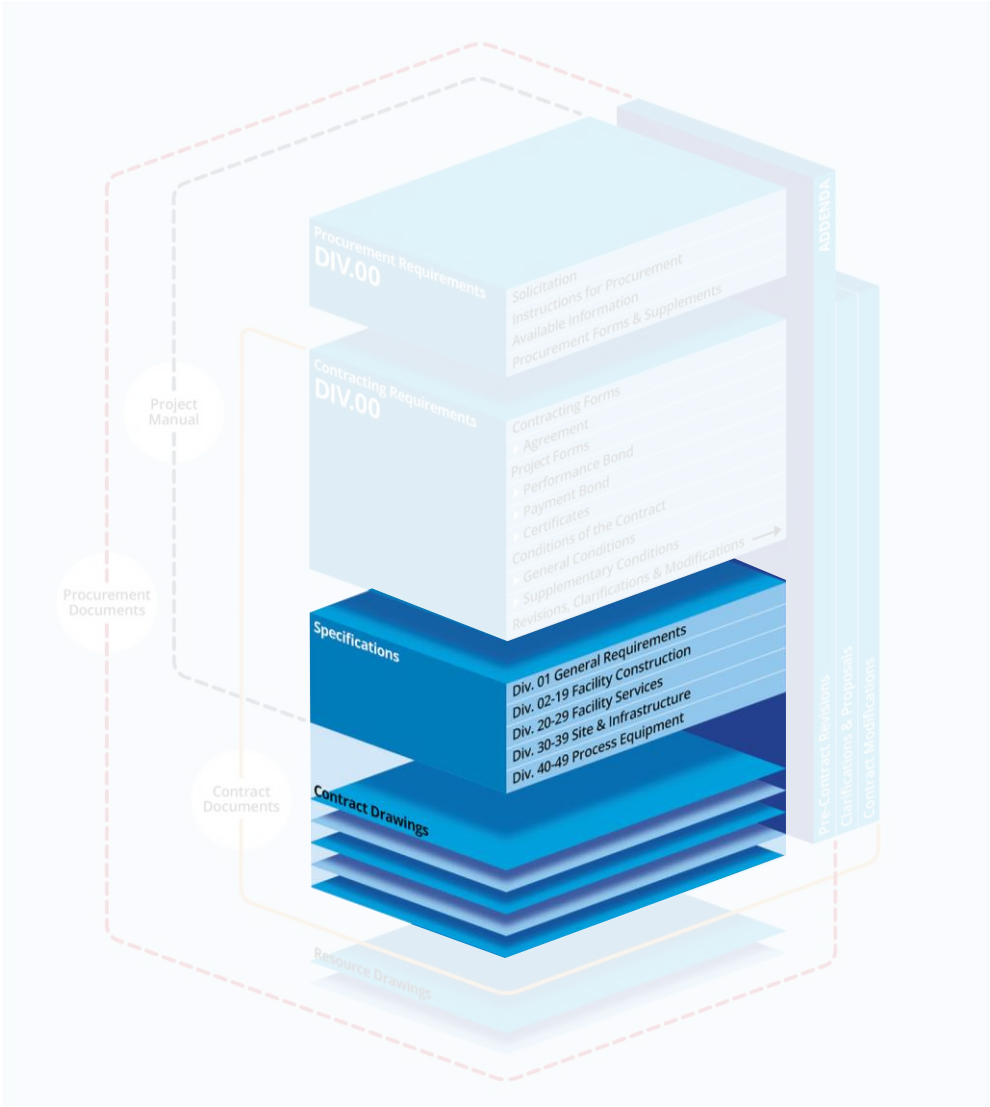
WHAT THE PROJECT REQUIRES

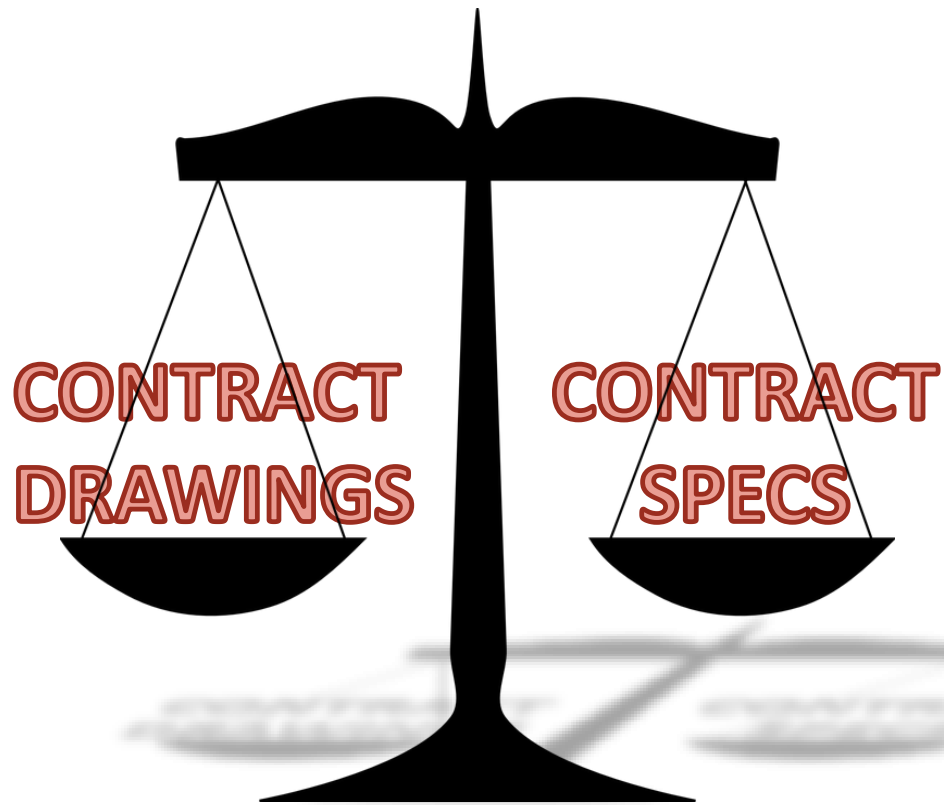
What are Construction Documents?

Illustration from:

Project Delivery Practice Guide, 3rd Edition

Construction Specifications Institute, 2020





Precedence:

- Most general conditions of the contract consider the contract documents to be “complementary”
 - “What is required by one shall be as binding as if required by all” (AIA A201)
- However, in situations of conflicting documents, legal interpretations will likely give precedence to the more specific.
- Some contracts may establish a predefined precedence



The Contract Drawings

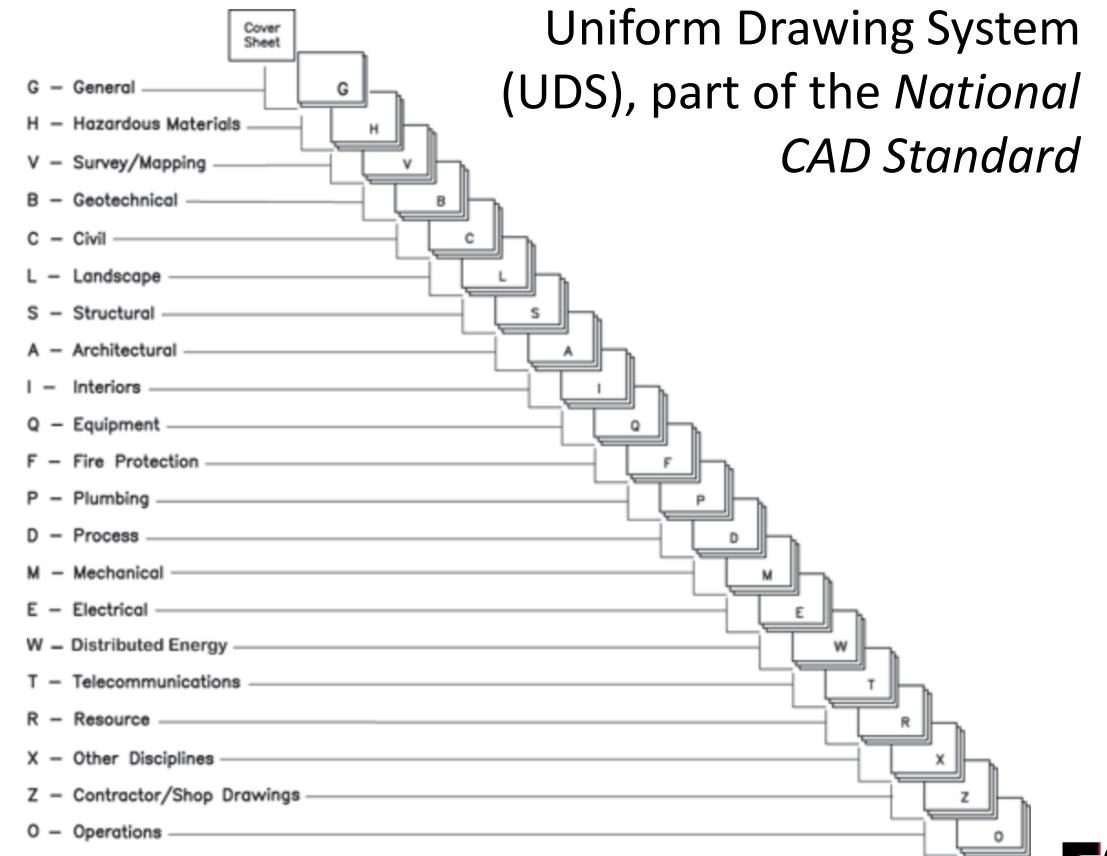
Drawings indicate relationships between building elements and may show the following for materials, assemblies, components, equipment, and accessories:

- Location
- Identification
- Dimension and size
- Details/diagrams of connections
- Shape and form

The Contract Drawings

Drawing set organization is not consistent among A/E firms

The location of firestopping requirements in the drawings is not consistent (if provided at all).

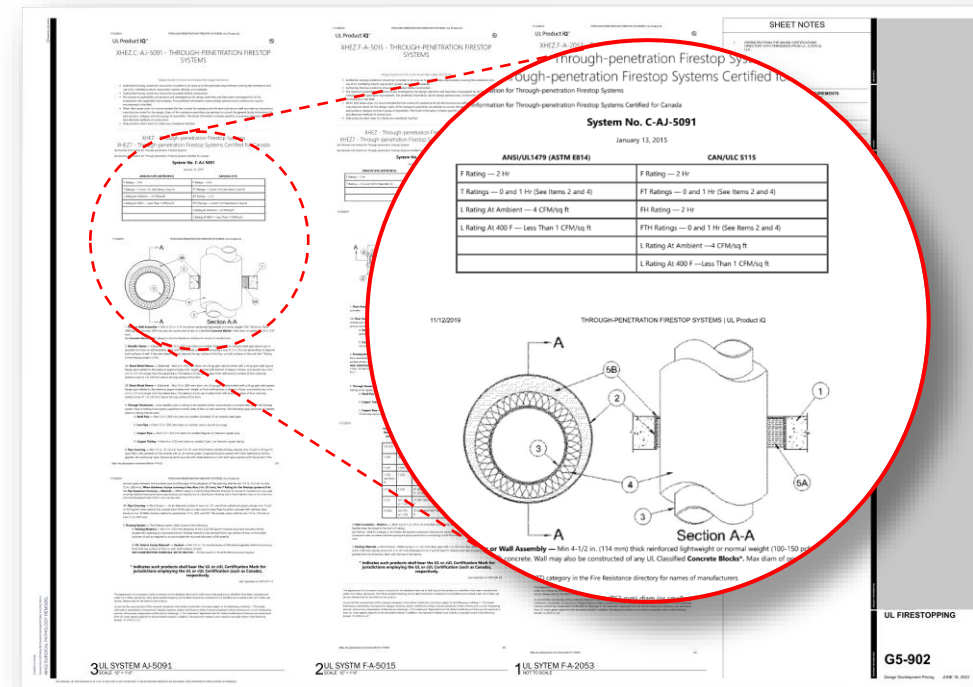


UDS Figure 1.2.1-1 Illustration of a typical drawing set.

The Contract Drawings

Drawing areas to review:

- G-series or A-series sheets for specific firestop assemblies



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- Code drawings (usually in the G-series) for locations of fire-rated assemblies



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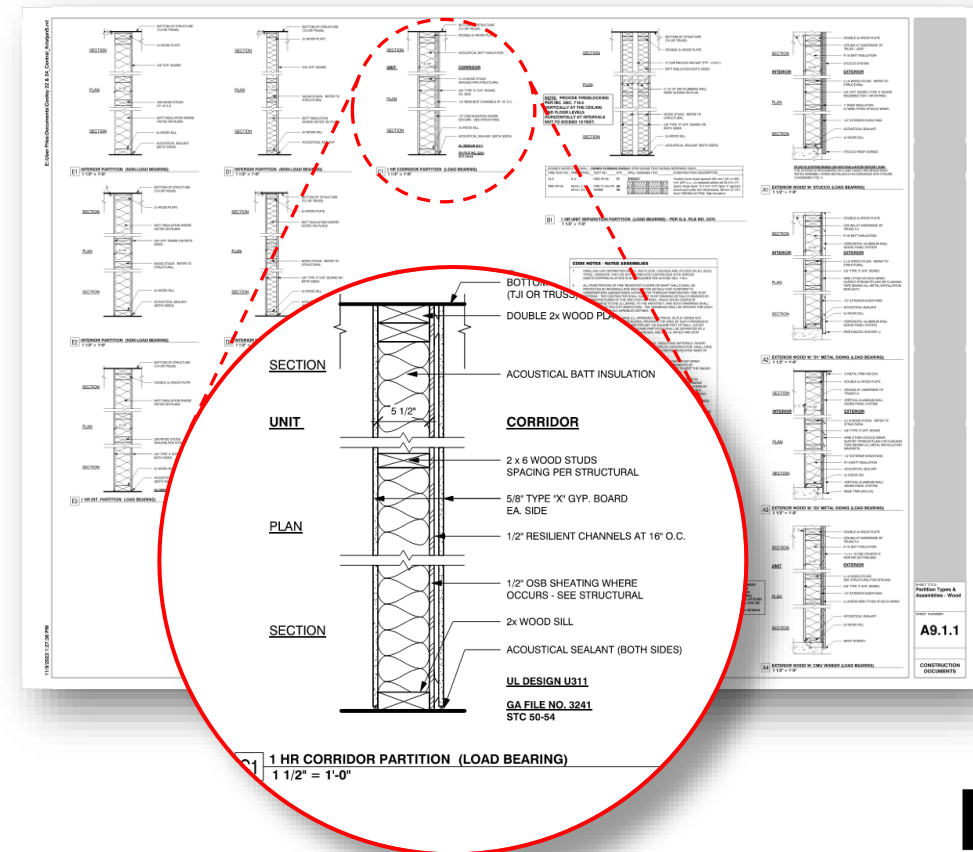
- G-series or A-series sheets for specific firestop assemblies
- Code drawings (usually in the G-series) for locations of fire-rated assemblies
- Mechanical, electrical, plumbing, and special systems drawings for routing of ducts, conduit, piping, cabling, etc. through fire-rated assemblies



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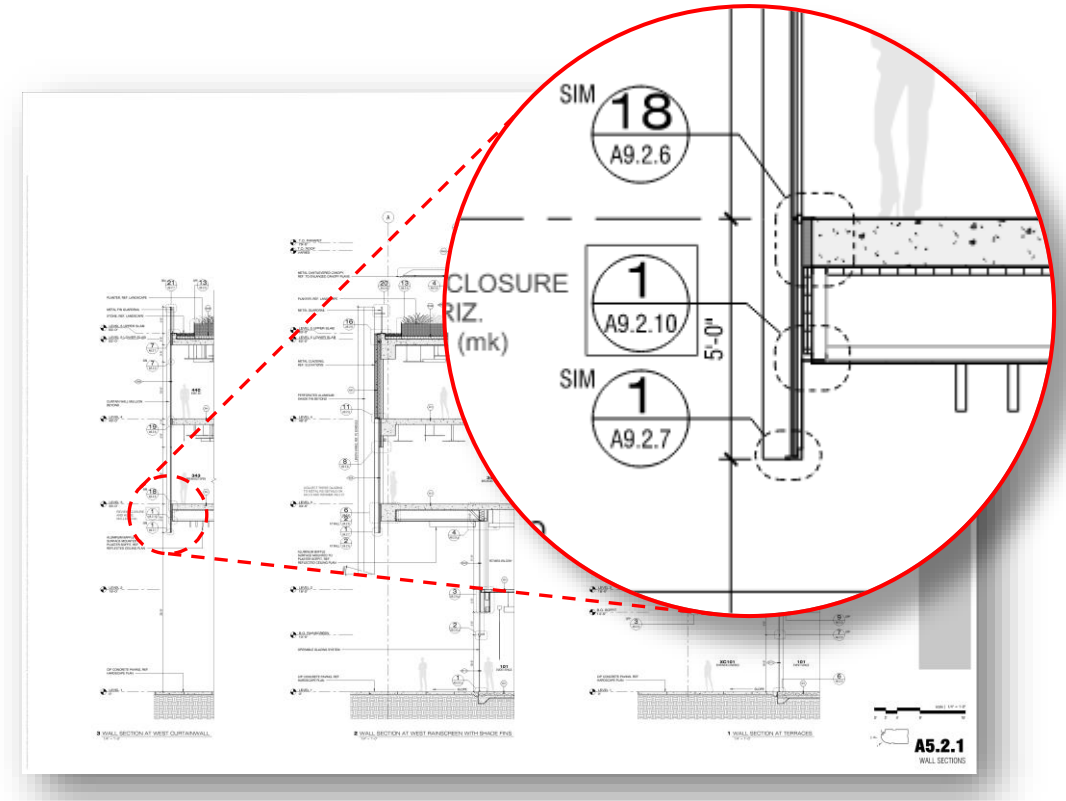
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- Mechanical, electrical, plumbing, and special systems drawings for routing of ducts, conduit, piping, cabling, etc. through fire-rated assemblies
- Wall, floor, and roof types to determine construction of assemblies
- Wall sections for perimeter fire-containment system conditions

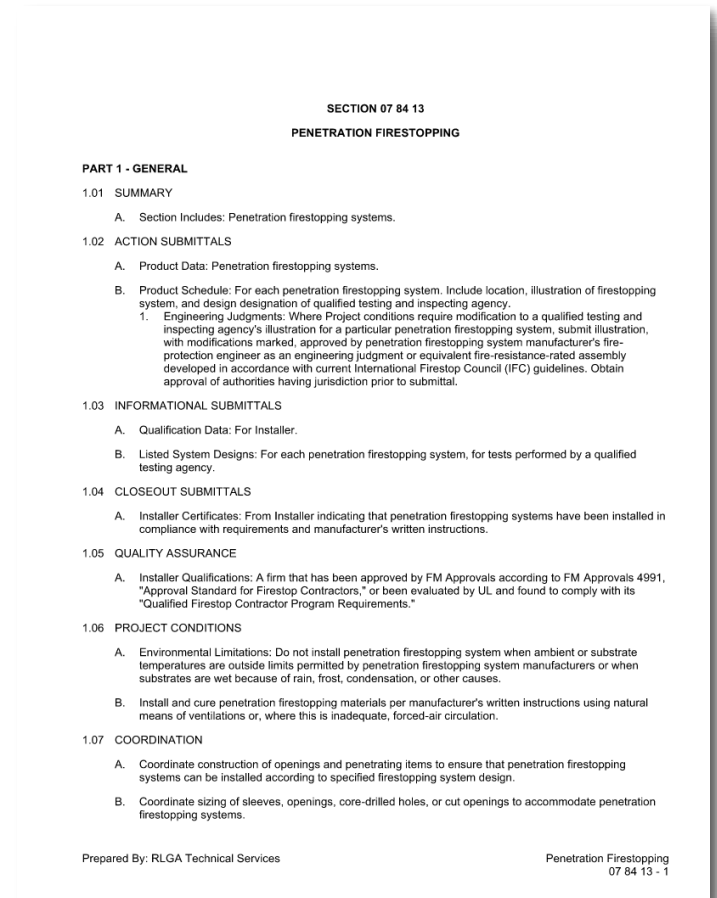


The Contract Specifications

Specifications detail the qualitative requirements for products, materials, and equipment

There are four methods of specifying:

- Performance
- Descriptive
- Reference standard
- Proprietary



The Contract Specifications

In many cases, a firestop specification will utilize all four of the methods:

- **Performance:**
“F-Rating: Not less than the fire-resistance rating of the wall penetrated.”
- **Descriptive:**
“Provide components for each penetration firestopping system that do not contain ethylene glycol.”
- **Reference Standard:**
“Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined in accordance with ASTM E814 or UL 1479.”
- **Proprietary:**
“Manufacturers: Subject to compliance with requirements, provide products by one of the following:
“ABC Company.
“LMNOP Inc.
“XYZ International.”



The Contract Specifications

Firestopping requirements are specified in Division 07 in the following possible sections:

- 07 84 00—Firestopping
 - 07 84 13—Penetration Firestopping
 - 07 84 43—Joint Firestopping (*may include building perimeter firestopping*)
 - 07 84 53—Building Perimeter Firestopping

Lesser-known firestop specification sections:

- 07 05 53—Fire and Smoke Assembly Identification
- 07 06 80—Schedules for Fire and Smoke Protection
 - 07 06 80.16—Firestopping Schedule



The Contract Specifications

Firestopping requirements may also be found in the following locations:

- Division 21 – Fire Suppression
- Division 22 – Plumbing
- Division 23 – Heating, Ventilating, and Air Conditioning (HVAC)
- Division 26 – Electrical
- Division 27 – Communications
- Division 28 – Electronic Safety and Security

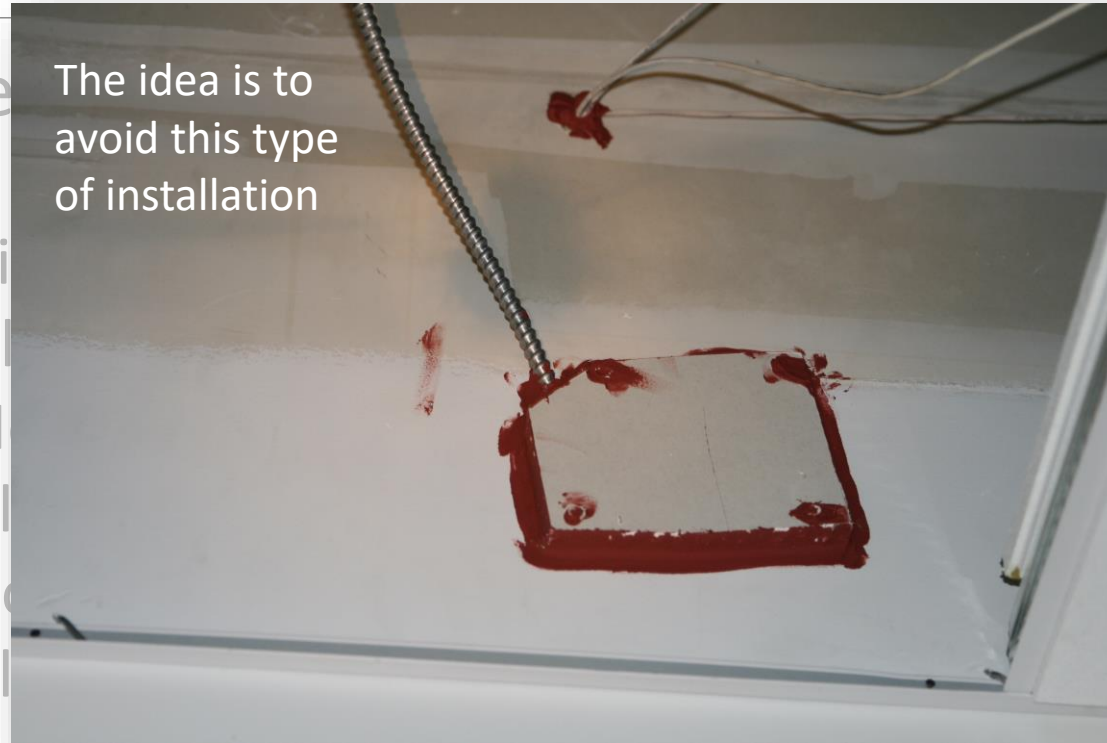
Requirements in the above follow the “*you poke it, you patch it*” concept



The Contract Specifications

Firestopping requires the following locations:

- Division 21 – Fire
- Division 22 – Pl
- Division 23 – H
- Division 26 – El
- Division 27 – Co
- Division 28 – El



the following

(HVAC)

Requirements in the above follow the “*you poke it, you patch it*” concept



The Contract Specifications

Firestopping requirements may also be found in the following locations:

- Division 21 – Fire Stop
- Division 22 – Plumb
- Division 23 – Heating, Ventilating and Air Conditioning (HVAC)
- Division 26 – Electrical
- Division 27 – Communication
- Division 28 – Electronic Safety and Security

Best Practice is to keep **all** firestopping requirements in **Division 07.**

Requirements in the above follow the “*you poke it, you patch it*” concept

The Contract Specifications



A specification section is separated into three PARTS:

- PART 1 – GENERAL

“Describes administrative and procedural requirements unique to the section. Part 1 expands on subjects covered in Division 01, adding information unique to the section.”

- PART 2 – PRODUCTS

“Describes the systems, assemblies, equipment, products, materials, fabrications, and mixes that are to be incorporated into the project.”

- PART 3 – EXECUTION

“Describes field/site installation or application, including preparatory actions and post-installation cleaning and protection. Field/site-built assemblies and field/site-manufactured products and systems are included.”

The Contract Specifications

PART 1 – GENERAL

Pay particular attention to the following:

- Submittals (Also look at Section 01 33 00—Submittal Procedures)
 - Product data
 - Engineering judgments
 - Qualification data (based on Quality Assurance requirements)
 - Installer certificates
- Administrative Requirements
 - Preinstallation Meetings – May be required; however, whether in the specifications or not, the Appendices in ASTM E2174 and ASTM E2393 state “pre-construction” meetings should be held

The Contract Specifications

PART 1 – GENERAL

Pay particular attention to the following: *(cont.)*

- Quality Assurance
 - Installer qualifications – FM-Approved per FM 4991 or UL Solutions Qualified Firestop Contractor Program
 - Mockups – May be required if appearance or quality of installation is important



The Contract Specifications

PART 2 – PRODUCTS

Pay particular attention to the following:

- **Manufacturers/Products:** May be proprietary or descriptive
 - May be limited by assemblies shown on drawings or listed in a schedule
 - Substitutions, if permitted, must comply with Section 01 25 00—Substitution Procedures
- **Ratings:** As indicated on drawings, as listed in a schedule, or as specified
 - May require ratings not required by code, such as:
 - M-Rating for movement capability per **ASTM E3037 “Standard Test Method For Measuring Relative Movement Capabilities Of Through-Penetration Firestop Systems”**
 - W-Rating for water resistance per UL 1479

The Contract Specifications

PART 3 – EXECUTION

Pay particular attention to the following:

- Identification: Labeling of firestop systems
- Special Inspection: May mention that systems are subject to special inspections
 - Owner-provided and not a requirement of the Installer
 - Inspected according to the following:
 - ASTM E2174 “Standard Practice for On-Site Inspection of Installed Firestops”
 - ASTM E2393 “Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers”
 - Installer must make necessary corrections



Quality Assurance (QA) & Quality Control (QC)

QA:

“The procedures for guarding against construction defects and deviations from the contract documents before and during the execution of the work.”

QC:

“The procedures for evaluating completed activities and elements of the work for conformance with contract requirements.”



Quality Assurance/Quality Control



Contractors/Installers:

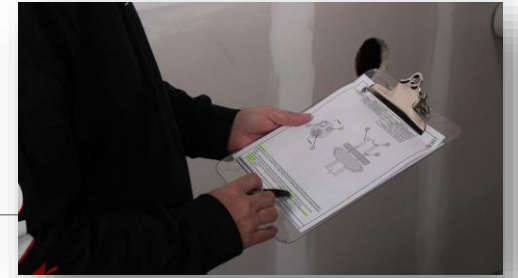
- FM-Approved Firestop Contractors
- UL Solutions Qualified Firestop Contractor Program



Benefits:

- Breeds an environment where firestop systems are installed correctly the first time and function as intended should they be called upon by fire and/or smoke
- Owners and design professionals have elevated levels of confidence
- Ensures consistency throughout the facility

Quality Assurance/Quality Control



Special Inspection Agency Approval

- IAS Special Inspection Agency Accreditation



Special Inspector Approval

- ICC Firestopping Certificate of Learning Achievement (CLA)
- ICC Certified Building Plans Examiner/Inspector, Combo Plans Examiner/Inspector, MCP, or any ICC Special Inspector
- IFC Firestop Inspector Certificate/Premier Certificate
- OSHPD California Inspector Certification
- UL, FM, or IFC Firestop Exams
- WABO Firestop Exams for Washington state residents



INTERNATIONAL FIRESTOP COUNCIL

NOTE: This slide edited by Bill McHugh, FCIA

QUESTIONS?

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