AIA25

Firestop Specifications: What Architects Need to Know

Course Number: FS-SPEC-23

Thursday, June 5th 1:00pm-1:30pm

Learning Units: 1 LU/HSW

1

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Keep space clear for closed captioning

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Questions related to specific products and services may be addressed at the conclusion of this presentation.

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About the Presenter

John Zalepka

Director of Training & Industry Engagements, Specified Technologies Inc.

- Over a decade of experience in firestopping, specification support, and industry education
- Leads STI's accredited training programs, reaching 20,000+ professionals annually
- Regular speaker at national events including AIA, CSI, and ASHE conferences
- Chair of the Communication/Education Committee for the International Firestop Council
- Developed dozens of AIA-approved courses focused on life-safety and code compliance
- Passionate about helping architects reduce liability and design for performance

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Course / Learning Objectives

- Recognize the importance of specifying firestop correctly.
- Identify and avoid the most common mistakes made when specifying firestop.
- Describe the features and shortcomings of the two most widely-used spec writing tools with respect to firestopping.
- Identify resources and solutions available to help make firestop specification faster, easier and with lower liability.

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Firestop is different

- Installed by every trade
- No single trade takes ownership
- Untrained installers
- Wrong products often specified, sold and installed
- No “universally recognized” licensed contractors

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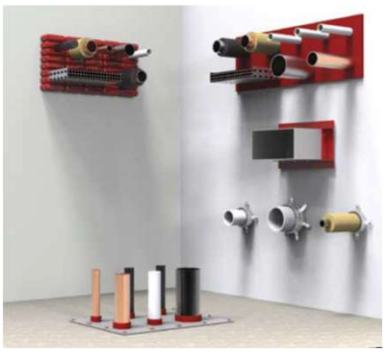
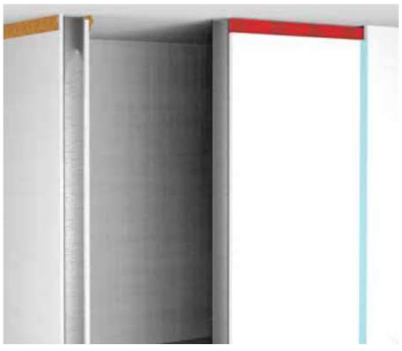
Firestopping application examples



MEP Penetrations

DataComm



Joints

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Key Principles of Balanced Fire Protection

1. Early <u>Detection</u>
   - Smoke, Heat, and CO Detectors
   - Fire Alarm and Monitoring Systems
2. Active <u>Suppression</u>
   - Sprinkler Systems
   - Portable Fire Extinguishers
3. Passive <u>Containment</u>
   - Compartmentalization
   - Fire-Rated Walls & Floors
   - Smoke Barriers & Partitions
   - Doors, Windows, Dampers, etc.
   - Firestop Systems

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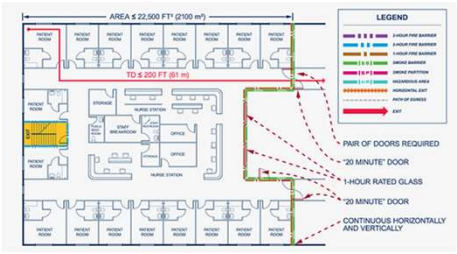
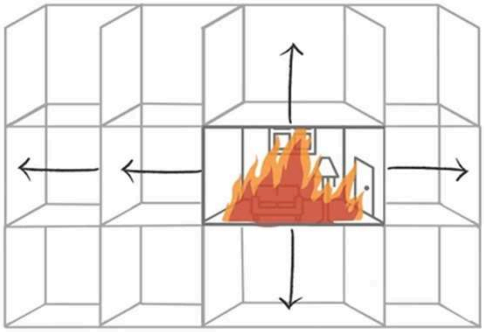
The role of barriers & compartmentation

The spread of fire can be restricted by dividing a building into separate compartments with fire-rated walls & fire-rated floors, increasing the availability of escape routes for occupants.





Compartmentation is critical for a successful defend-in-place strategy

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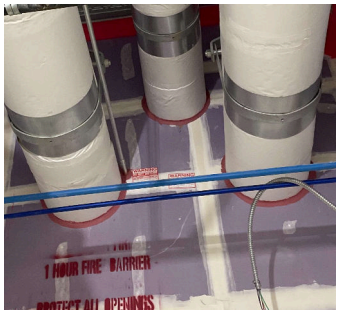
What is firestopping?

The process of sealing openings around penetrating items or in construction joints to restore hourly fire resistance ratings



A barrier with unsealed openings has been compromised

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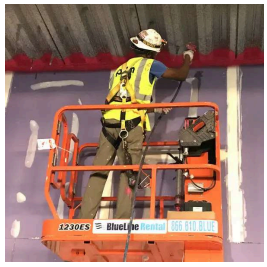
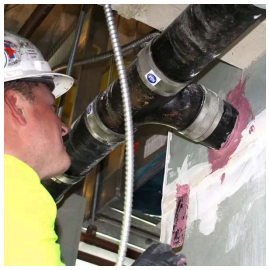
What are firestop products?

- Specially formulated, independently tested, fire-resistive products for sealing penetrations and joints in fire-rated walls and floors against the spread of fire and smoke.
- Critical part of a balanced fire & life safety plan.





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Why do architects have to specify firestop?

- Building codes require it.
- Firestopping falls under Division 7, Thermal & Moisture Protection.
- 2020 MasterFormat®:
  - 07 84 13 Penetration Firestopping
  - 07 84 43 Joint Firestopping
  - 07 84 53 Building Perimeter Firestopping

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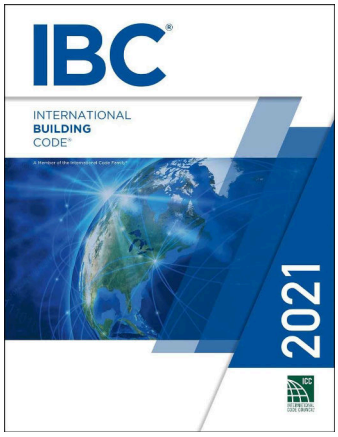
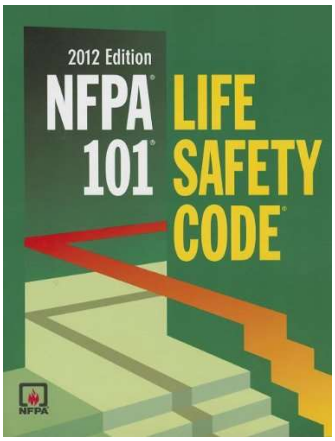
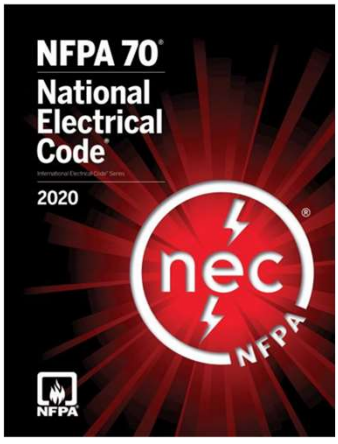
Basics Of Code Requirements







All Model Codes Require Fire & Smoke Protection

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Recognized and accredited third-party test facilities (US)

Tests conducted per ASTM & UL code-required standards

UL Solutions

intertek
Total Quality. Assured.

FM Approvals
Member of the FM Global Group

"Nationally recognized testing laboratories" are of equal status in regulations (code acceptance)

Each test lab publishes its own listing directory

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Firestop System Ratings

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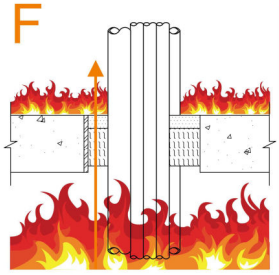
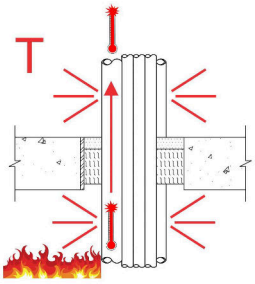


The time-period that the through-penetration firestop system limits the spread of fire through the penetration when tested in accordance with ASTM E 814 or UL1479.

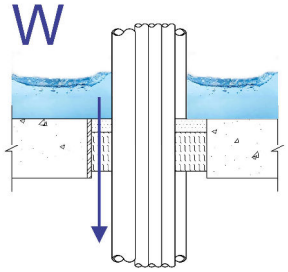
T



The time it takes for a single point on the non-fire side to reach 325ºF over the initial starting temperature

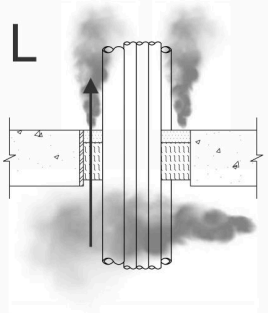
(e.g. 400 ºF where the ambient temperature was 75ºF)

W



- **Quantifiably measures resistance of a firestop product to water in buildings**
- 3 feet of head pressure is applied to the seal for 72 hours to determine if the seal is "water-tight"
- Intended to address "washout" during construction

L



- 714.4.4 Penetrations in ***smoke barriers***.
- Systems for penetrations in smoke barriers must be tested for air leakage per UL 1479.
- L Rating shall not exceed:
  - 5 cfm/sf of opening for each firestop system
  - Total of 50 cfm for any 100 sf of wall or floor area

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Let's start with an important code reminder

Construction Documents

IBC *(2012, 2015, 2018, 2021 Editions)* - Section 107.2.1

"…Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code…as determined by the *building official*."

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So how do you protect yourself and meet the intent of the code?

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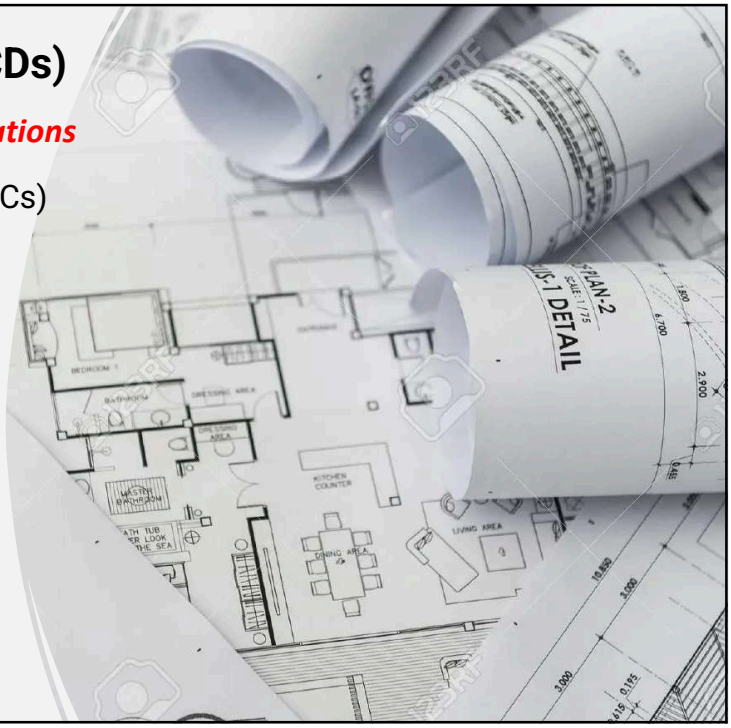
Construction Documents (CDs)

More than just drawings & specifications

- Uniform General Conditions (UGCs)
- Owner's Special Conditions
- Specifications & Details
- Architectural Drawings
- Certificates
- Applications
- Work Orders
- Change Orders
- Etc, etc, etc.



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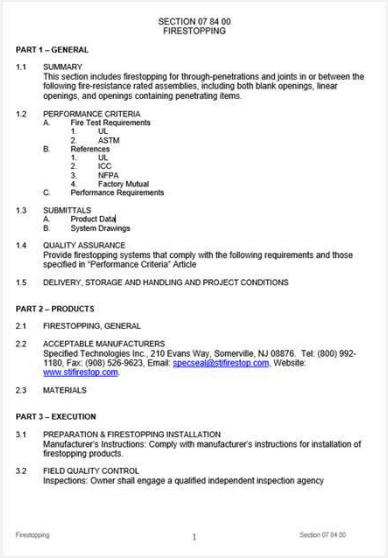
CSI – Format Spec

A uniform approach to organizing specification language contained in a project manual

PART 1 GENERAL
- SUMMARY
- PRICE/PAYMENT PROCEDURES
- REFERENCES
- ADMINISTRATIVE
- REQUIREMENTS
- SUBMITTALS
- ACTION/INFORMATIONAL
- SUBMITTALS
- CLOSEOUT SUBMITTALS
- MAINTENANCE MATERIAL
- SUBMITTALS
- QUALITY ASSURANCE
- DELIVERY, STORAGE,
- AND HANDLING
- FIELD/SITE*
- CONDITIONS
- WARRANTY/BOND

PART 2 PRODUCTS
- OWNER-FURNISHED/
- OWNER-SUPPLIED PRODUCTS
- SYSTEMS/ASSEMBLIES
- MANUFACTURED UNITS
- EQUIPMENT
- COMPONENTS
- PRODUCT TYPES
- MATERIALS
- ACCESSORIES
- SOURCE QUALITY CONTROL

PART 3 EXECUTION
- INSTALLERS
- EXAMINATION
- PREPARATION
- ERECTION /INSTALLATION/
- APPLICATION
- CONSTRUCTION
- REPAIR/RESTORATION
- RE-INSTALLATION
- FIELD/SITE QUALITY CONTROL
- SYSTEM STARTUP
- ADJUSTING
- CLEANING
- CLOSEOUT ACTIVITIES
- PROTECTION
- MAINTENANCE
- ATTACHMENTS



SECTION 07 84 00
FIRESTOPPING

PART 1 – GENERAL

1.1 SUMMARY
This section includes firestopping for through-penetrations and joints in or between the following fire-resistance rated assemblies, including both blank openings, linear openings, and openings containing penetrating items.

1.2 PERFORMANCE CRITERIA
A. Fire Test Requirements
1. UL
2. ASTM
B. References
1. UL
2. ICC
3. NFPA
4. Factory Mutual
C. Performance Requirements

1.3 SUBMITTALS
A. Product Data
B. System Drawings

1.4 QUALITY ASSURANCE
Provide firestopping systems that comply with the following requirements and those specified in "Performance Criteria" Article

1.5 DELIVERY, STORAGE AND HANDLING AND PROJECT CONDITIONS

PART 2 – PRODUCTS

2.1 FIRESTOPPING, GENERAL

2.2 ACCEPTABLE MANUFACTURERS
Specified Technologies Inc., 210 Evans Way, Somerville, NJ 08876. Tel: (800) 992-1180, Fax: (908) 526-9623, Email: specseal@stifirestop.com, Website: www.stifirestop.com.

2.3 MATERIALS

PART 3 – EXECUTION

3.1 PREPARATION & FIRESTOPPING INSTALLATION
Manufacturer's Instructions: Comply with manufacturer's instructions for installation of firestopping products.

3.2 FIELD QUALITY CONTROL
Inspections: Owner shall engage a qualified independent inspection agency

Firestopping 1 Section 07 84 00

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Specification Resources

- MasterSpec® or RIB formerly BSD
- 4specs.com, Arcat, Sweets
- Internal master specifications
- Copy from previous project
- Manufacturers' websites
- Associations: FCIA Firestop Contractors International Association, CSI
- Others

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Common mistakes when specifying firestop

- Copy / Paste
- Not coordinating:
  - Specs with drawings
  - Firestop section 07 84 XX with MEP specs
- Not addressing slab edge early enough
- Multiple manufacturers on spec and in drawings
- Not specifying firestop special inspections
- Not addressing important issues with GCs before bidding

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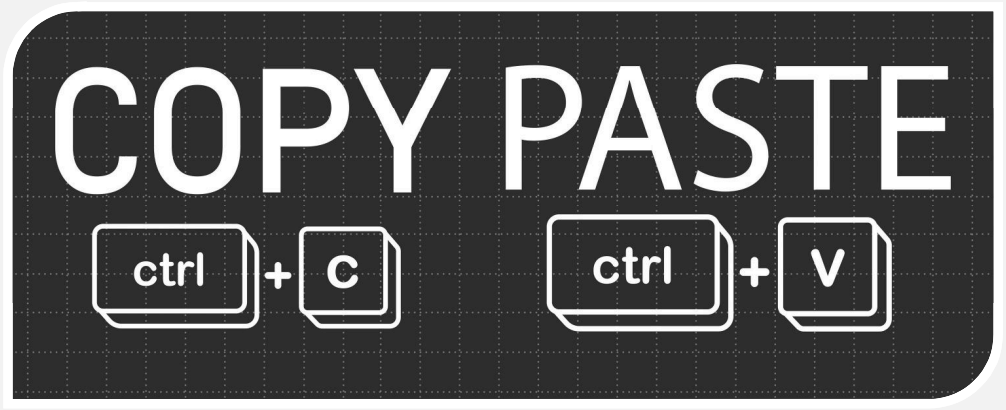
Common mistakes when specifying firestop

- Copying & pasting spec's from previous projects



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Common mistakes when specifying firestop

- Not coordinating specs with drawings
  - QA / QC issue
  - Multiple brands
  - Which prevails: specs, plan drawings, detail drawings?
  - ***Solution: perform quick check***
- Not coordinating firestop specs (07 84 XX) with M/E/P/T sections
  - Potentially conflicting requirements
  - Which section prevails?
  - ***Solution: direct M/E/P/T consultants to refer to 07 84 XX for firestopping requirements.***

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Common mistakes when specifying firestop

- Putting multiple manufacturers' systems on the drawings and in the spec

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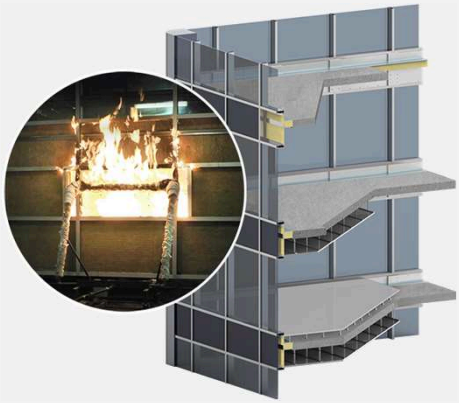
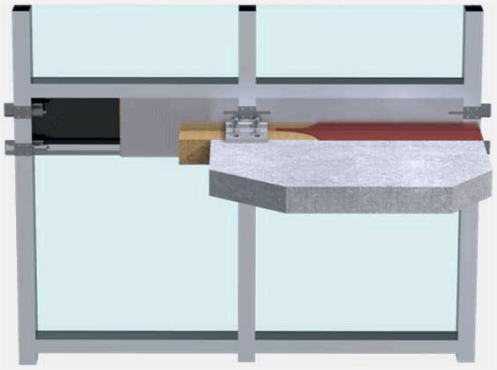
Common mistakes when specifying firestop

- Not addressing slab edge / curtain wall early enough.





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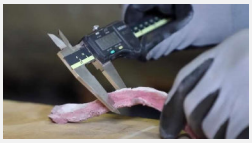
Common mistakes when specifying firestop

- Not specifying special inspection for firestopping when required by code



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Firestop Special Inspections

IBC 2021

1705.18 Fire-resistant penetrations and joints

- **Special inspections** are required for penetrations, joints and perimeter fire barrier systems in high-rise buildings or in buildings assigned to Risk Category III or IV.
  - Risk Category III: Buildings / structures that represent a substantial hazard to human life in the event of failure
  - Risk Category IV: Buildings / structures designated as essential facilities
  - ***New in 2021 IBC: "...or in fire areas containing Group R occupancies with an occupant load greater than 250..."***

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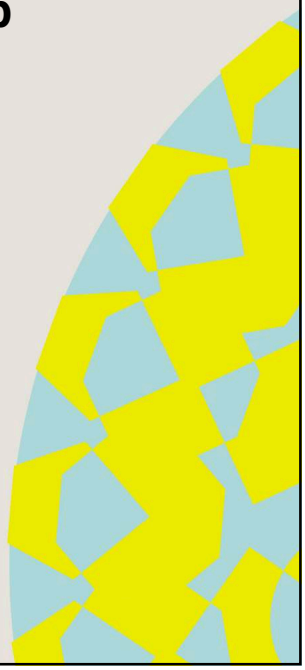
Common mistakes when specifying firestop

Not addressing these important issues with GCs before bidding

1. UL or FM certified firestop contractors
2. Single source
3. Value-added products
4. Preconstruction meetings



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Common mistakes not addressed with GC's up-front

1. **Not using a UL or FM certified contractor**
   - FM 4991 or UL's Qualified Firestop Contractor Program.
   - Most contracts put firestop responsibility on subs

FM APPROVED 4991

UL Solutions Qualified Firestop Contractor Program

- ***Solution: Address FSCs early with GC – prior to bidding of subcontracts.***

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Common mistakes not addressed with GC's up-front

2. **Not using "single source" firestop - one brand for entire project**
   One brand simplifies everything:
   - Submittal review
   - Inspections
   - Installer training & certification
   - Eliminates compatibility & warranty issues

   - ***Solution: Address upfront with the GC, who is responsible for driving this on-site.***

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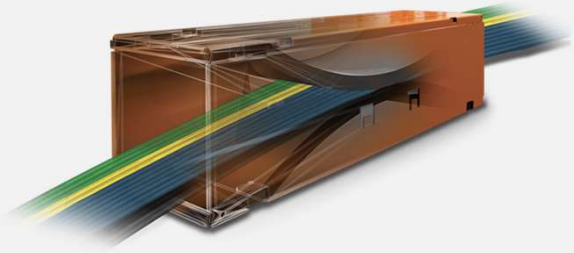
Common mistakes not addressed with GC's up-front

3. **Ensuring value-added products are installed**
   - Beware of Value Engineering
   - Example: Fire rated cable pathways



- ***Solution: Address value-added solutions with owner and GC prior to bidding.***

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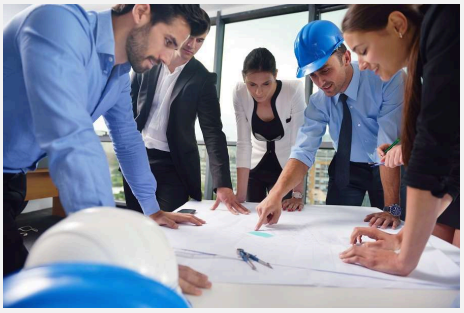
Common mistakes not addressed with GC's up-front

4. Not addressing firestop in preconstruction meetings

- Coordinate all parties:
  - AHJ
  - Owner
  - Architect
  - Manufacturers
  - GC
  - Subcontractors



- ***Solution: Address firestop up front, as early as possible***

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Recommendations when specifying firestop

- Review & update specs
- Uniform set of details on drawings
- Using one brand (single source) for the entire project
- Hold a pre-construction meeting for firestop
- Address curtainwall as early as possible
- Coordination with engineering consultants
- Coordination between specs and drawings (QA / QC)
- Enforce the use of FM or UL Certified contractors
- Drive value-added products

Address firestop issues early!

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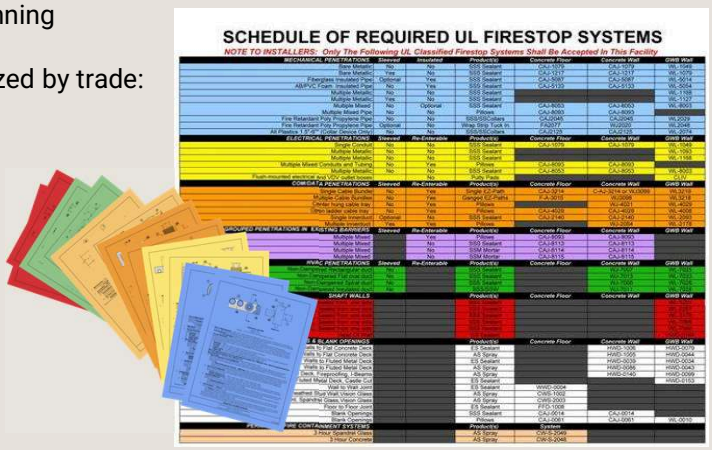
Set the Standard…

BMP® BARRIER MANAGEMENT PROGRAM

Standardized set of systems for the project are selected during planning

Systems are organized by trade:

- Mechanical
- Electrical
- Plumbing
- Sprinkler
- Drywall
- Mason
- Data
- Etc.



…by streamlining and clarifying the parameters of the job

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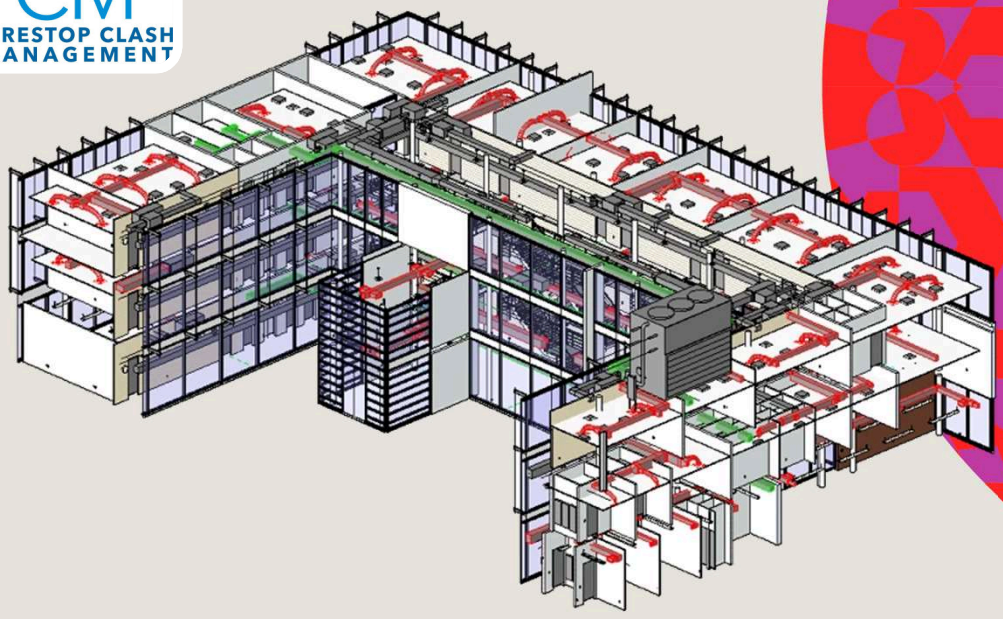
FCM FIRESTOP CLASH MANAGEMENT



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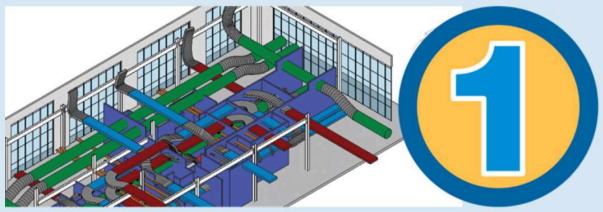
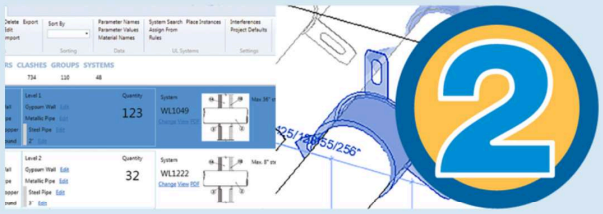


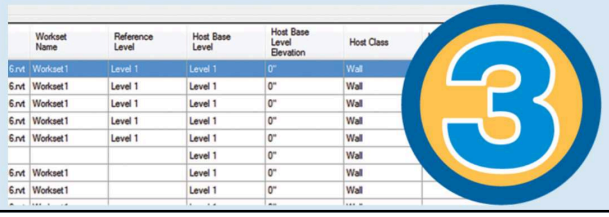
Step 1: Clash Detection

Scan the Revit® model to find clash points where firestopping is required.



Step 2: System & Product Selection

Firestop systems are selected and automatically assigned to each clash point. Chooses the correct firestop product every time and imports relevant information into the model.



	Workset Name	Reference Level	Host Base Level	Host Base Level Elevation	Host Class
6.rvt	Workset1	Level 1	Level 1	0"	Wall
6.rvt	Workset1	Level 1	Level 1	0"	Wall
6.rvt	Workset1	Level 1	Level 1	0"	Wall
6.rvt	Workset1	Level 1	Level 1	0"	Wall
6.rvt	Workset1	Level 1	Level 1	0"	Wall
			Level 1	0"	Wall
6.rvt	Workset1		Level 1	0"	Wall
6.rvt	Workset1		Level 1	0"	Wall

Step 3: Openings Report

Generates openings reports with assembly details and firestop system information for coordination meetings.

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Digital documentation programs can help

- Streamline the Firestop tracking process using mobile tools (app or web)
- Platforms include both iOS and Android
- Interactive with underlying floor drawings
- Track penetrations, construction joints, doors, dampers, etc.
- Turn-key solution with pre-printed QR labels
- Share documents easily
- Corrective action reports

Firestop Locator

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