IBC CODE UPDATE: CHANGES RELATED TO FIRESTOPPING AND JOINT SYSTEMS

Includes updates from the 2012, 2015, and 2018 Editions of the IBC

BSA Code Committee – February 2020

AGENDA

- **Firestopping Review**
- **Perimeter Fire Containment**
- **Non Fire-Resistance Rated Roof or Floor**
- **Membrane Penetrations**
- **T-Rating Requirements**
- **Maintenance**
- **Special Inspection**
- **Code Clarification Topics**
- **Summary**
- **Hilti Technical Resources**

INTERNATIONAL BUILDING CODE (2012)

Section 712.3.1.2 – Through-penetration firestop systems

"Through-penetrations shall be protected by an approved penetration firestop system installed as tested in accordance with ASTM E 814 or UL 1479…"

Section 713.3 – Fire resistant joint systems

"Fire resistant joint systems shall be tested in accordance with the requirements of either ASTM-E1966 or UL 2079…"

What is the key term in the code language above?

INTERNATIONAL BUILDING CODE (2012)

Section 712.3.1.2 – Through-penetration firestop systems

"Through-penetrations shall be protected by an approved penetration firestop **system** installed as tested in accordance with ASTM E 814 or UL 1479…"

Section 713.3 – Fire resistant joint systems

"Fire resistant joint **systems** shall be tested in accordance with the requirements of either ASTM-E1966 or UL 2079…"

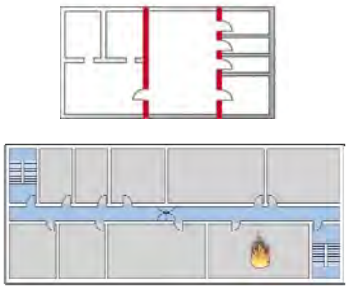
Firestopping is a system approach. The product and installation instructions specific to that product make the system.

FIRESTOP SYSTEM TESTING PROCESS

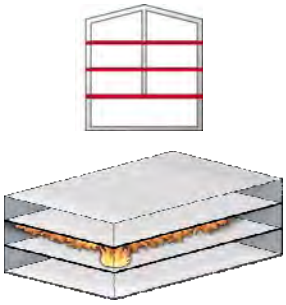
ONE GLOBALLY APPLIED PRINCIPLE FOR FIRE SAFETY: COMPARTMENTATION (FIRE COMPARTMENTS)

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

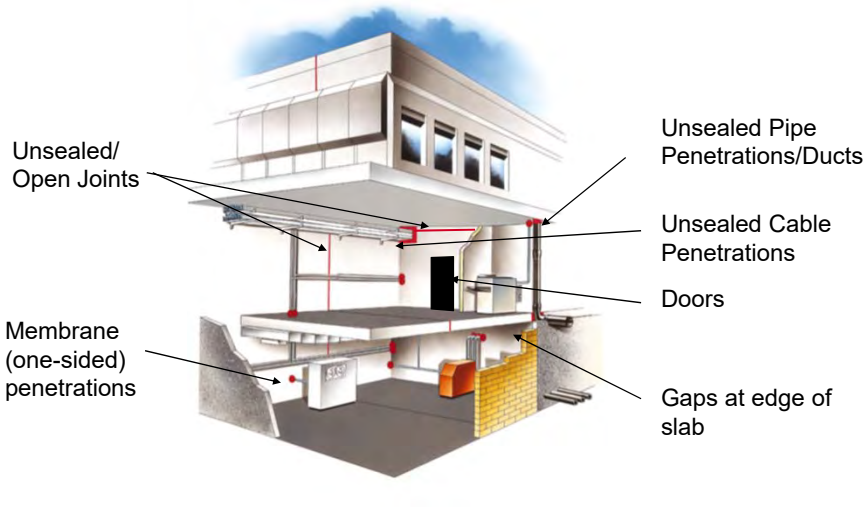
Fire-Rated walls



Fire-Rated floors



AREAS THAT CAN ALLOW FOR FIRE/SMOKE SPREAD:

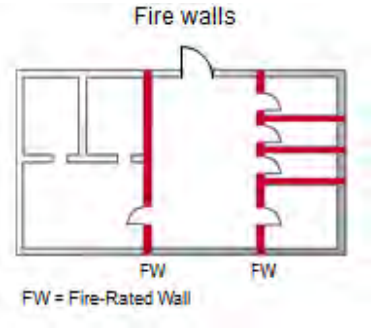


IBC SECTION 714.3.1.2: THROUGH PENETRATION FIRESTOP SYSTEMS TESTED TO ASTM E 814 / UL 1479

Testing procedure determines F-rating and T-rating of firestop system:

F-Rating

The duration of time in which flames do not pass through the system.



To receive either rating the firestop system must pass the hose stream test

IBC SECTION 714.3.1.2: THROUGH PENETRATION FIRESTOP SYSTEMS TESTED TO ASTM E 814 / UL 1479

Testing procedure determines F-rating and T-rating of firestop system:

T-Rating

The time period it takes for the non-fire side of the penetrating item to reach a temperature of 325°F (163°C) above its initial ambient temperature.

- *Not a pass/fail criterion*

To receive either rating the firestop system must pass the hose stream test*
Note: Hose stream test not required in Canada

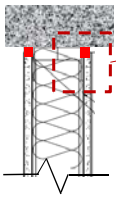
IBC SECTION 715.3: JOINT FIRESTOP SYSTEMS TESTED TO ASTM E 1966 / UL 2079

Assembly Rating

Measures fire and **temperature** on the non-fire side of the joint

Hose stream required for top-of-wall and wall-to-wall joints

Joint undergoes cyclic testing prior to fire testing

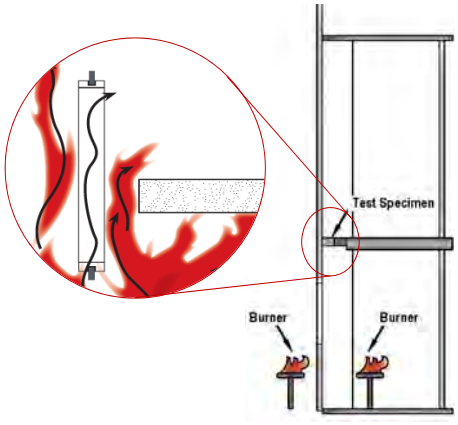


A revised UL 2079 5th test edition came into effect on August 26, 2017 affects pre-formed firestop devices

PENETRATIONS THROUGH JOINTS

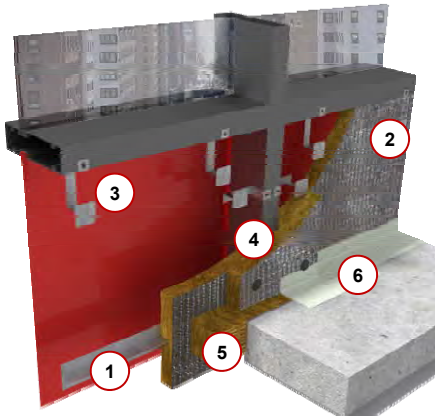
What happens to T-Rating?

IBC 715.4: PERIMETER FIRE BARRIER (JOINT) EXTENDS THE FIRE RATING OF THE FLOOR TO THE EXTERIOR WALL



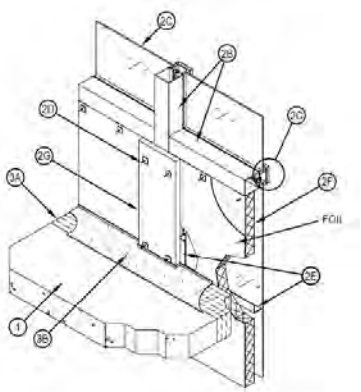
Perimeter fire barrier testing is unique,
with fire exposure from both below and from outside

KEY ELEMENTS TO PERIMETER FIRE BARRIER SYSTEM

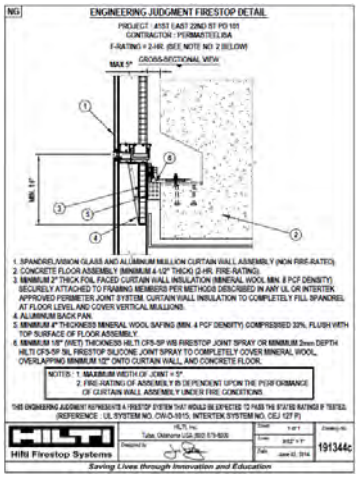


1. Stiffener angle at floor line
2. Insulation board
3. Mechanical attachment of insulation board
4. Protection of mullions
5. Mineral wool safing (compression fit)
6. Firestop sealant

PERIMETER FIRE BARRIER – APPLICATIONS



System No. CEJ-127 P
Glass Spandrel Panel with
Aluminum Framing



Due to unique design of many curtain wall systems, EJs are typically issued

IBC CODE UPDATE: CHANGES RELATED TO FIRESTOPPING AND JOINT SYSTEMS

Includes updates from the 2012, 2015, and 2018 Editions of the IBC

AGENDA

- **Objectives**
- Perimeter Fire Containment
- Non Fire-Resistance Rated Roof or Floor
- Membrane Penetrations
- T-Rating Requirements
- Maintenance
- Special Inspection
- Code Clarification Topics
- Summary
- Hilti Technical Resources

OBJECTIVES

- Learn new code changes related to firestopping and how they may affect your projects
- Identify potential project challenges
- Discuss the benefits of partnering with Hilti
- Updates include 2012, 2015 and 2018 editions of the IBC

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- Firestopping Review
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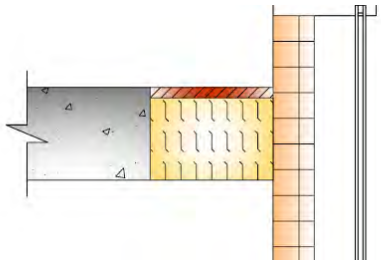
PERIMETER FIRE CONTAINMENT

- Objective: “prevent the passage of flame for the time period at least equal to the fire-resistance rating of the floor assembly and prevent the passage of heat and hot gases sufficient to ignite cotton waste”
- F-rating? T-rating? Other?

- 2012 Edition added clarity - Perimeter fire barriers only need an F-rating



PERIMETER FIRE CONTAINMENT

Base language has not changed from 2012 through 2018

715.4 - Exterior Curtain wall/floor intersection

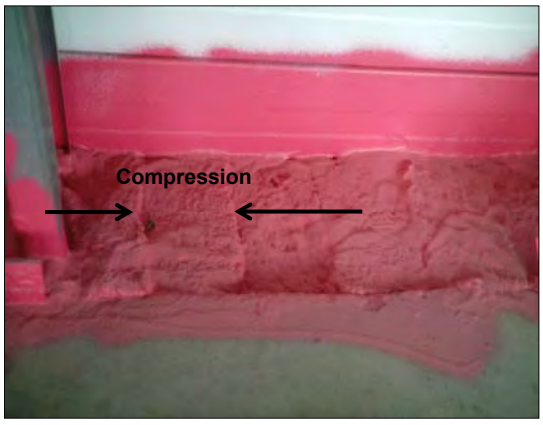
Where fire resistance rated floor or floor/ceiling assemblies are required, voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies shall be sealed with an approved system to prevent the interior spread of fire. Such systems shall be securely installed and tested in accordance with ASTM E2307 to provide an F rating for the time period not less than the fire resistance rating of the floor assembly.

PERIMETER FIRE CONTAINMENT SYSTEM: EXCEPTION FOR FLOOR TO CEILING GLASS

- Exception added to 2012 IBC language remains the same through 2018.
- Exception: Voids created at the intersection of the exterior curtain wall assemblies and such floor assemblies where the vision glass extends to the finished floor level shall be permitted to be sealed with an approved material to prevent the interior spread of fire. Such material shall be securely installed and capable of preventing the passage of flame and hot gases sufficient to ignite cotton waste where subjected to ASTM E 119 time-temperature fire conditions under a minimum positive pressure differential of 0.01 inch (0.254 mm) of water column (2.5 Pa) for the time period at least equal to the fire-resistance rating of the floor assembly.

Still requires a tested solution

TRIVIA QUESTION: WHAT IS WRONG IN THIS PICTURE?



Answer: Incorrect orientation of mineral wool safing

MINERAL WOOL SAFING INSULATION

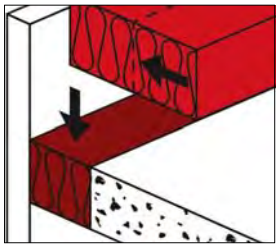
Problem:

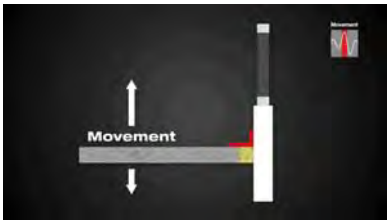
- Incorrectly installed safing insulation can dislodge and compromise the joint.
- Movement capacity diminished

Solution:

- On-site installer training by manufacturer (CSI Division 078400 – Field Quality Control)
- Specify manufacturers that offer job-site installer training services

$$\text{Safing Thickness} = \frac{\text{Joint Width x 100}}{\text{100} - \text{\% Compression}}$$





Always refer to the listed system for compression requirements

WHEN A TESTED FIRESTOP SYSTEM DOES NOT MATCH A FIELD CONDITION, ENGINEERING JUDGMENTS NEEDED

Engineering Judgments are issued in accordance with the guidelines established by the International Firestop Council.

- Not to be used in lieu of available tested systems
- Must be issued by qualified technical personnel
- Based upon previously tested system(s)
- Based upon assumption that the recommended system (EJ) would pass if tested for the required rated period of time
- Issued only for a single job, location and application

IFC International FireStop Council

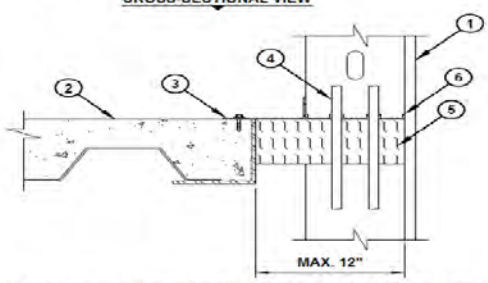
KP

ENGINEERING JUDGMENT FIRESTOP DETAIL

PROJECT :
CONTRACTOR :

F-RATING = 2-HR. (SEE NOTE NO. 4 BELOW)

CROSS-SECTIONAL VIEW



1. EXTERIOR DENSGLASS WITH STEEL STUD FRAMING CURTAIN WALL ASSEMBLY (NON FIRE-RATED).
2. CONCRETE FLOOR OVER METAL DECKING ASSEMBLY (MINIMUM 2-1/2" THICK) (2 HR. FIRE RATING).
3. STEEL ANGLE (MIN. 1/8" THICK) SECURELY FASTENED TO CONCRETE FLOOR AND CURTAIN WALL.
4. MAXIMUM 1/2" DIAMETER METAL CLAD CABLE (MAX. QTY. = 2).
5. MINIMUM 4" THICKNESS MINERAL WOOL SAFING (MIN. 4 PCF DENSITY) COMPRESSED 33% AND FLUSH WITH TOP SURFACE OF FLOOR ASSEMBLY.
6. MINIMUM 1/8" (WET) THICKNESS HILTI CFS-SP WB FIRESTOP JOINT SPRAY OR MINIMUM 2mm (WET) THICKNESS HILTI CFS-SP SIL FIRESTOP SILICONE JOINT SPRAY TO COMPLETELY COVER MINERAL WOOL, OVERLAPPING MINIMUM 1/2" ONTO STEEL ANGLE, PENETRANTS AND CURTAIN WALL.

NOTES : 1. MAXIMUM WIDTH OF JOINT = 12".
2. ANNULAR SPACE BETWEEN PENETRANTS AND PERIPHERY OF OPENING = MINIMUM 1/4".
3. ANNULAR SPACE BETWEEN PENETRANTS = MINIMUM 1/4".
4. FIRE-RATING OF ASSEMBLY IS DEPENDENT UPON THE PERFORMANCE OF CURTAIN WALL ASSEMBLY AND STEEL ANGLE UNDER FIRE CONDITIONS.
5. THIS SYSTEM IS DESIGNED AS A STATIC SYSTEM ONLY.

THIS ENGINEERING JUDGMENT REPRESENTS A FIRESTOP SYSTEM THAT WOULD BE EXPECTED TO PASS THE STATED RATINGS IF TESTED.
(REFERENCE : UL/cUL SYSTEM NO. C-AJ-1606; INTERTEK SYSTEM NO. CEJ 421 P)

Hilti Firestop Systems

HILTI, Inc
Plano, Texas USA (800) 879-8000

Designed by

Sheet 1 of 1
Scale 5/32" = 1"
Date July 10, 2017

Drawing No 266072a

JOINT BETWEEN FIRE BARRIER AND EXTERIOR WALL

2012 Code Change- Added words that are underlined below

707.8 Joints. Joints made in or between *fire barriers*, and joints made at the intersection of *fire barriers* with underside of a fire-resistance rated floor or roof sheathing, slab, or deck above, and the exterior vertical wall intersection shall comply with Section 715.

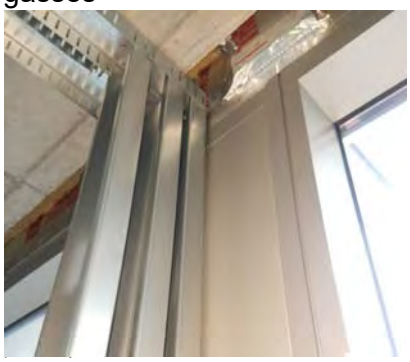
- No test method available for joint between fire barrier wall and non-rated exterior wall
- If specified or demanded by AHJ, can be EJ
- Fixed in IBC 2015
  - Added section 715.4.2
  - Requires “approved material or system”

2015 CHANGE: VERTICAL JOINTS AT CURTAIN WALL

Section 715.4.2 added to address the voids at intersection of nonrated exterior curtain walls and vertical fire barriers.

"… An approved material or system shall be used to fill the void and shall be securely installed in or on the intersection for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to retard the passage of fire and hot gasses"

Language remains the same in the 2018 edition.



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JOINTS: RATED WALL TO NON-RATED ROOF OR FLOOR

- **IBC 2000, 2003, 2006, 2009:**
- 707.5 Continuity. Fire barriers shall extend from the top of the foundation or floor/ceiling assembly below to the underside of the floor or roof sheathing, slab or deck above and shall be securely attached thereto. Such fire barriers shall be continuous through concealed space, such as the space above a suspended ceiling. Joints and voids at intersections shall comply with Sections 707.8 and 707.9
- **IBC 2012, 2015, 2018**
- 707.9 Voids at intersections. The voids created at the intersection of a fire barrier and a non-fire-resistance-rated roof assembly or a nonfire-resistance rated exterior wall assembly shall be filled. An approved material or system shall be used to fill the void, shall be securely installed in or on the intersection for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to retard the passage of fire and hot gases.

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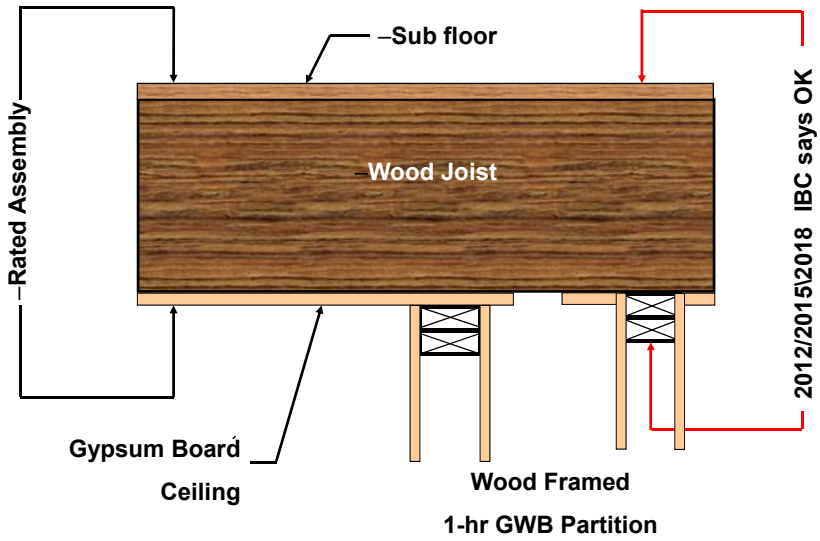
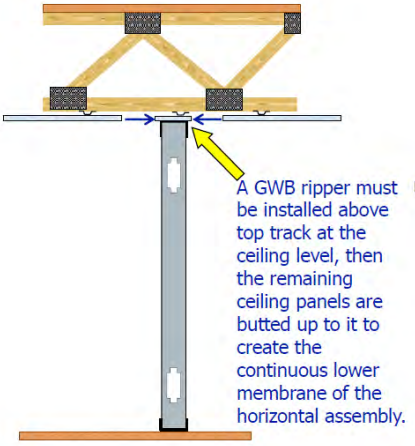
MEMBRANE PENETRATIONS IN HORIZONTAL ASSEMBLIES 2012 NEW EXCEPTION NO. 7, 2015 SLIGHT CHANGE:

- **Section 714.4.2. Exception 7:**
  - The ceiling membrane of 1- and 2-hour fire-resistance-rated horizontal assemblies is permitted to be interrupted with a double wood top plate of a wall assembly that is sheathed with Type X gypsum wallboard, provided that all penetrating items through the double top plate are protected in accordance with section 714.4.1.1 or 714.4.1.2 and the ceiling membrane is tight to the top plates.

MEMBRANE PENETRATIONS IN HORIZONTAL ASSEMBLIES



When a horizontal assembly meets a metal stud wall in Type V-A the only option for the ceiling membrane is for a GWB "ripper" to be installed above the top track, so the ceiling membrane is continuous. Detail FCA-1 on sheet A0.35 accomplishes this. During construction, the GWB rippers must be cut wider than the top track by code and to prever damage when holes are drilled for penetrations.

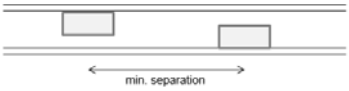


CODE CHANGES RELATING TO MEMBRANE PENETRATIONS

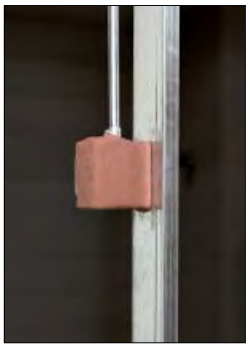
IBC 714.3.2: Membrane Penetrations Firestop Systems tested to ASTM E 814 / UL 1479

Recessed fixtures shall be installed such that the required fire resistance will not be reduced.

- Steel boxes less than 16 sq. inches with annular space less than 1/8"
- Sum total area of openings does not exceed 100 square inches for any 100 sq. ft. of wall
- Steel electrical boxes on opposite sides of wall should be separated by a horizontal distance > 24 inches in noncommunicating stud cavities



- Steel boxes closer than 24 inches or in communicating stud cavities must be protected



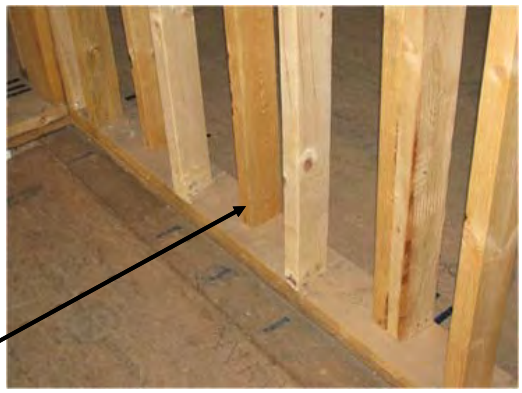
2009 CHANGE: 24 INCH RULE APPLIES ONLY TO NON-COMMUNICATING STUD CAVITIES

Such boxes on opposite sides of the wall or partition shall be separated by one of the following:

1.1. By a horizontal distance of not less than 24 inches (610 mm) where the wall or partition is constructed with individual noncommunicating stud cavities;

Language remains the same through 2018 edition.

THIS IS AN EXAMPLE OF COMMUNICATING STAGGERED STUD CAVITIES WHERE THE 24 INCH RULE CANNOT BE UTILIZED.

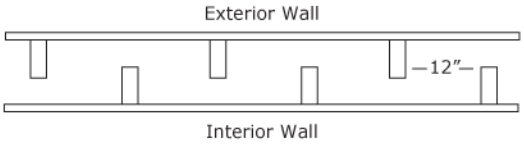


GAP ALLOWS SMOKE AN FIRE SPREAD BETWEEN CAVITIES

COMMUNICATING VERSE NONCOMMUNICATING STUD CAVITIES

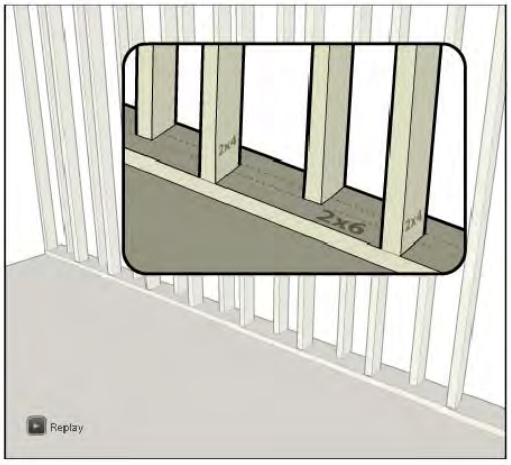
(View from above)

Staggered Stud **"COMMUNICATING"**



Conventional **"NONCOMMUNICATING"**

COMMUNICATING STUD WALL



ALTERNATIVES TO 24 INCH HORIZONTAL SEPARATION

Such boxes on opposite sides of the wall or partition shall be separated by one of the following:

1.1 By a horizontal distance of not less than 24 inches (610 mm) where the wall or partition is constructed with individual noncommunicating stud cavities;

1.2. By a horizontal distance of not less than the depth of the wall cavity where the wall cavity is filled with cellulose loose-fill, rockwool or slag mineral wool insulation;

1.3. By solid fireblocking in accordance with Section 717.2.1;

1.4. By protecting both outlet boxes with listed putty pads; or

1.5. By other listed materials and methods.

2015 CHANGE: 6TH EXCEPTION ADDED

- **714.3.2 …Walls….recessed fixtures shall be installed such that the required fire resistance will not be reduced. Exceptions:**
  - **Exception 6.**
    Membrane penetrations of maximum 2-hour fire resistance-rated walls and partitions by steel electrical boxes that exceed 16 square inches in area, or steel electrical boxes of any size having an aggregate area through the membrane exceeding 100 square inches in any 100 square feet of wall area, provided such penetrating items are protected by listed putty pads or other listed materials and methods, and installed in accordance with the listing.

2018 CHANGE: 8TH EXCEPTION ADDED TO HORIZONTAL ASSEMBLIES

- **714.5.2 …Membranes that are part of a horizontal assembly…recessed fixtures shall be installed such that the required fire resistance will not be reduced. Exceptions:**

  NEW Exception 8.
  Ceiling membrane penetrations by listed luminaires (light fixtures) or by luminaires protected with listed materials, which have been tested for use in fire-resistance-rated assemblies and are installed in accordance with the instructions included in the listing.

SHAFT ENCLOSURES 2018 CHANGE:

- Added new language to allow membrane penetrations on the outside of the shaft wall where through penetrations are prohibited.

- **713.8 Penetrations.** Penetrations in a shaft enclosure shall be protected in accordance with Section 714 as required for *fire barriers*. Structural elements, such as beams or joists, where protected in accordance with Section 714 shall be permitted to penetrate a shaft enclosure.
  - **713.8.1 Prohibited penetrations.** Penetrations other than those necessary for the purpose of the shaft shall not be permitted in shaft enclosures.
  - **Exception:** *Membrane penetrations* shall be permitted on the outside of shaft enclosures. Such penetrations shall be protected in accordance with Section 714.4.2.

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CODE CHANGES RELATING TO T RATINGS

Floor penetrations 714.4.1.2 …**The system shall have an F rating/ T rating of not less than 1 hour but not less than the required rating of the floor penetrated.**

- **Existing: 1**. Floor penetrations contained and located within the cavity of a wall above the floor or below the floor do not require a T rating
- **2012 IBC: 2**. Floor penetrations by floor drains, tub drains or shower drains contained and located within the concealed space of a horizontal assembly do not require a T rating.

NEW T-RATING EXCEPTION

- **2015 IBC:**
  3. Floor penetrations of maximum 4-inch (102 mm) nominal diameter penetrating directly into metal-enclosed electrical power switchgear do not require a T rating.

MODIFIED T-RATING EXCEPTION

- **2018 IBC:**
  3. Floor penetrations of maximum 4-inch nominal diameter metal conduit or tubing penetrating directly into metal-enclosed electrical power switchgear do not require a T rating.

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FIRE CODE (IFC) 2015 MODIFICATION ANNUAL INSPECTION OF RATED ASSEMBLIES

703.1 Maintenance The required fire-resistance rating of fire-resistance-rated construction, including, but not limited to, walls, firestops, shaft enclosures, partitions, smoke barriers, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistant joint systems, shall be maintained. Such elements shall be visually inspected by the owner annually and properly repaired, restored or replaced where damaged, altered, breached or penetrated. Records of inspections and repairs shall be maintained. Where concealed, such elements shall not be required to be visually inspected by the owner unless the concealed space is accessible by the removal or movement of a panel, access door, ceiling tile or similar movable entry to the space.

FIRE CODE (IFC) 2018 REWRITTEN NEW SECTIONS ADDED ANNUAL INSPECTION OF RATED ASSEMBLIES

NEW SECTION 701.5 MAINTAINING PROTECTION

Materials, systems and devices used to repair or protect breaches and openings in fire-resistance-rated construction and construction installed to resist the passage of smoke shall be maintained in accordance with Sections 703 through 707.

NEW SECTION 701.6 OWNER'S RESPONSIBILITY

The owner shall maintain an inventory of all required fire-resistance-rated construction, construction installed to resist the passage of smoke and the construction included in Sections 703 through 707. Such construction shall be visually inspected by the owner annually and properly repaired, restored or replaced where damaged, altered, breached or penetrated. Records of inspections and repairs shall be maintained. Where concealed, such elements shall not be required to be visually inspected by the owner unless the concealed space is accessible by the removal or movement of a panel, access door, ceiling tile or similar movable entry to the space.

FIRE CODE (IFC) 2018 REWRITTEN NEW SECTIONS ADDED ANNUAL INSPECTION OF RATED ASSEMBLIES

NEW SECTION 703 PENETRATIONS

703.1 Maintaining protection. Materials and firestop systems used to protect membrane and through penetrations in fire-resistance-rated construction and construction installed to resist the passage of smoke shall be maintained. The materials and firestop systems shall be securely attached to or bonded to the construction being penetrated with no openings visible through or into the cavity of the construction. Where the system design number is known, the system shall be inspected to the listing criteria and manufacturer's installation instructions.

NEW SECTION 704 JOINTS AND VOIDS

704.1 Maintaining protection. Where required when the building was originally constructed, materials and systems used to protect joints and voids in the following locations shall be maintained. The materials and systems shall be securely attached to or bonded to the adjacent construction, without openings visible through the construction.

AGENDA

- Objectives
- Perimeter Fire Containment
- Non Fire-Resistance Rated Roof or Floor
- Membrane Penetrations
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- **Special Inspection**
- Code Clarification Topics
- Summary
- Hilti Technical Resources

THIRD-PARTY SPECIAL INSPECTION OF FIRESTOP MANDATORY STARTING IN 2012 IBC

Special Inspection requirements in accordance with Section 1705.17 for high-rise buildings or in buildings assigned to Risk Category III or IV.

Inspection of installed firestop applications shall be conducted in accordance with:

- ASTM E 2174, “Standard Practice for On-Site Inspection of Installed Fire Stops”
- ASTM E 2393, “Standard Practice for On-Site Inspection of Installed Fire Resistive Joints and Perimeter Fire Barriers”

ASTM E 2174, "STANDARD PRACTICE FOR ON-SITE INSPECTION OF INSTALLED FIRE STOPS"

- Statistical sampling
- Verify materials prior to installation
- Verify against listed systems and/or EJs
- Verify that ALL firestops installed

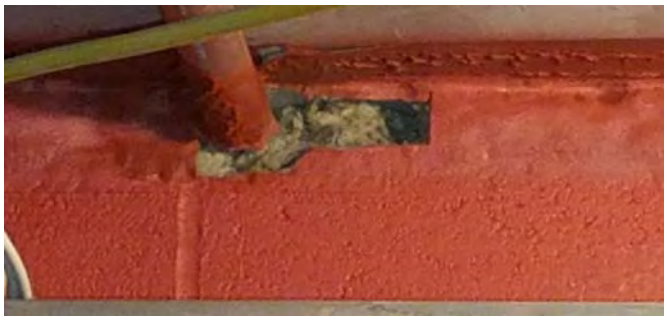
- ASTM E2174: *Standard Practice for On-Site Inspection of Installed Fire Stops*
  - For each "type" of firestop being installed:
    - Witness 10% of Installations, or Destructive Testing on 2% of Installations

ASTM E 2393, "STANDARD PRACTICE FOR ON-SITE INSPECTION OF INSTALLED FIRE RESISTIVE JOINTS AND PERIMETER FIRE BARRIERS"

- 5% WITNESS OF INSTALL-OR

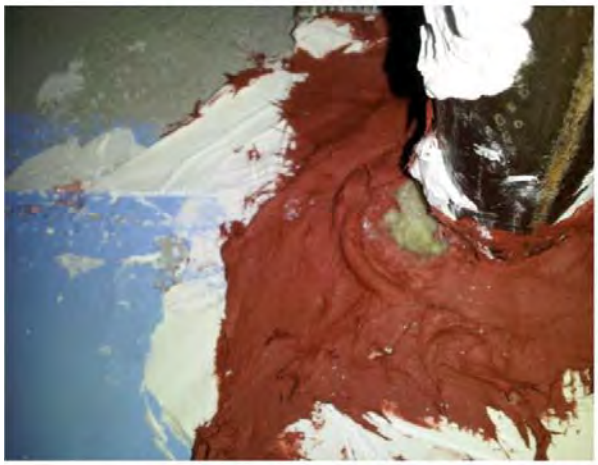
– **Minimum of 1 FOOT sampling per type of joint system per 500 lineal feet**

– **Typical types:**
  - **Head of wall (perpendicular to flutes, Parallel to flutes, terminate at beam)**
  - **Bottom of wall**
  - **Slab edge**
  - **Drywall to columns or beams**
  - **Dissimilar materials**



COMMON INCORRECT INSTALLATIONS

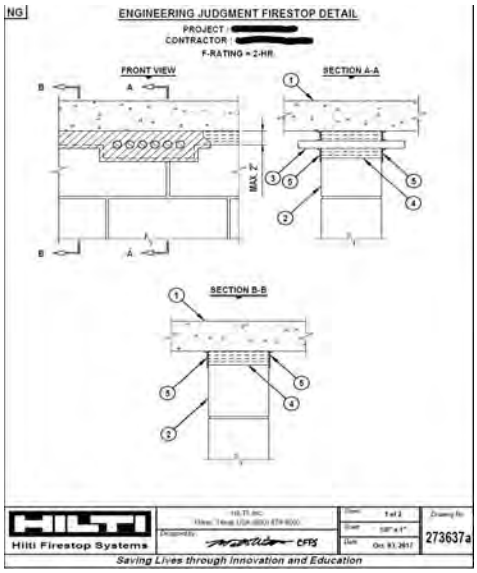
Visible mineral wool// This application requires 5/8" depth of caulk

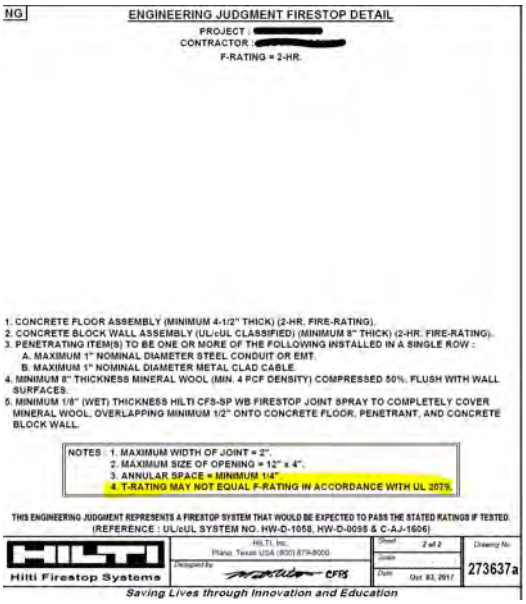


Pipe runs through plane of rated wall assembly

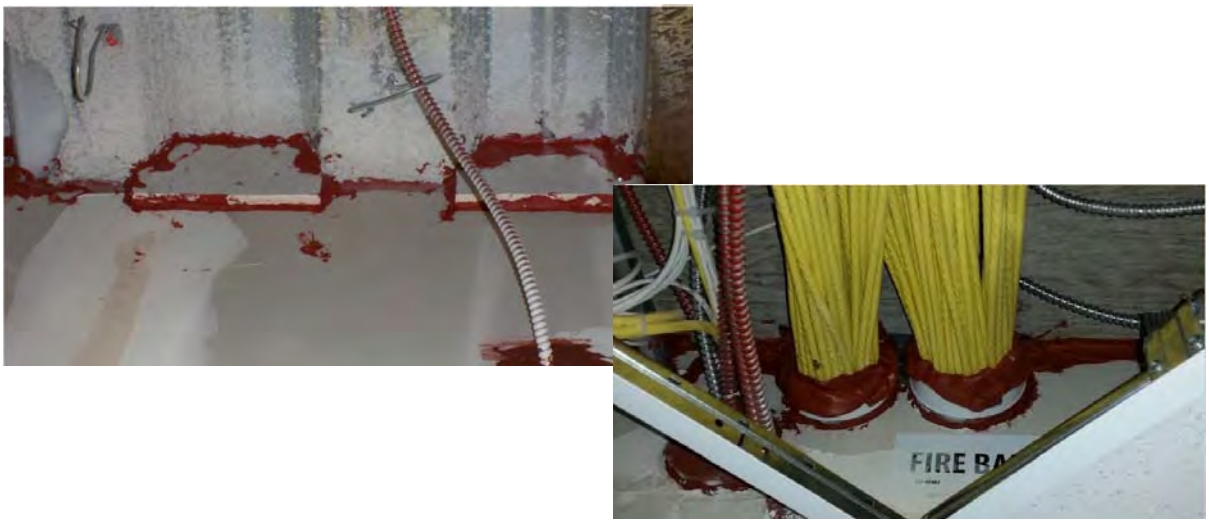
COMMON INCORRECT INSTALLATIONS

COMMON INCORRECT INSTALLATIONS

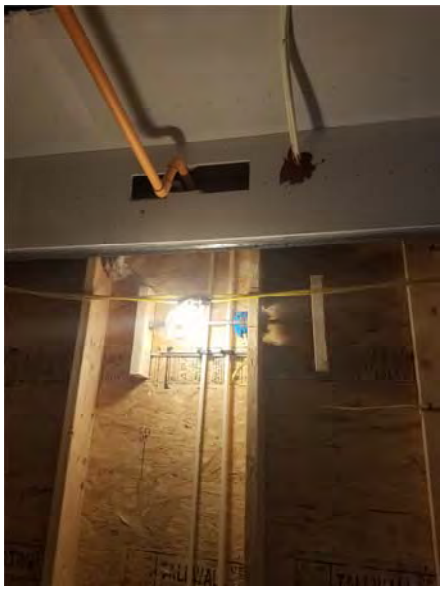


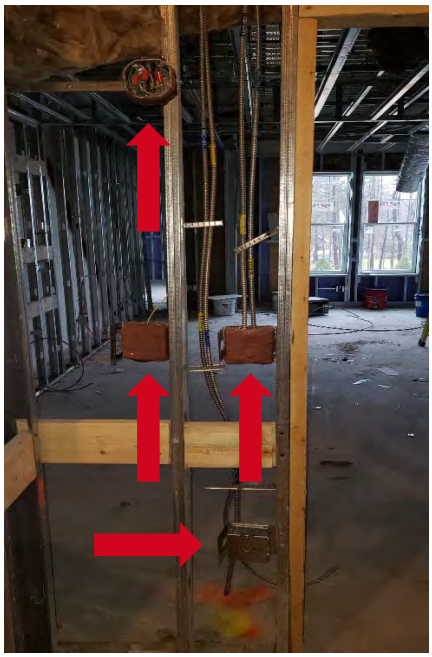


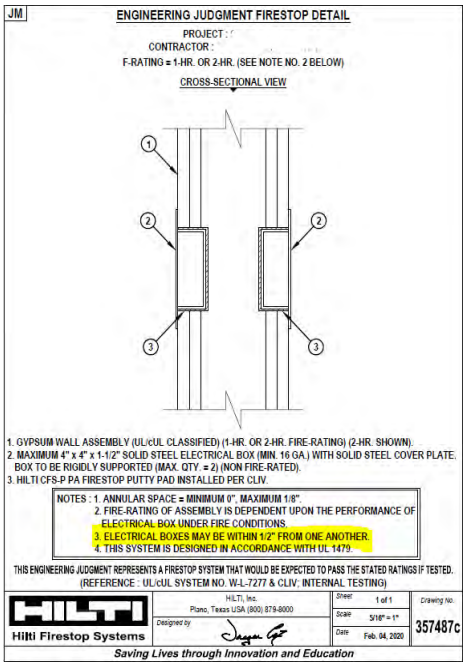
COMMON INCORRECT INSTALLATIONS



COMMON INCORRECT INSTALLATIONS







WHICH INSTALLATIONS ARE INCORRECT?

AGENDA

- Firestopping Review
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2015 AND 2012 CODE CLARIFICATIONS

2015 Code Clarifications

- **Revised Section 703.2** Adds Fire Resistance Rating clarification for joints and penetrations
- **Revised Section 714** Format for clarity on fire-resistance-rated horizontal assemblies.
- **Deleted Chapter 34:** Maintaining existing fire-protection features relocated from IBC to International Existing Building Code (IEBC)

2012 Code Clarifications

- **Added Definitions (Chapter 2):** L-rating, membrane penetration, through penetration (firestop system)
- **Revised 711.5**: Penetrations of horizontal assemblies, whether concealed or unconcealed, shall comply with section 714
- **New Section: 712 – Vertical Openings:** Firestopping now one of 18 (condensed to 16 in 2015) equal, legal ways to protect/allow a hole in the floor

2018 CODE CLARIFICATIONS

- **New Section 714.2 Installation** – A listed penetration firestop system shall be installed in accordance with the manufacturer's installation instructions and the listing criteria.
- **Revised Section 714.4.1.1 and 714.5.1.1 Fire-resistance-rated assemblies -** *Through penetrations* shall be protected using systems installed as tested in the *approved* fire-resistance-rated assembly.
- **Revised Section 715.1 Added New Exception to Joints** - *Fire-resistant joint systems* shall not be required for joints in all of the following locations…
  - **NEW #** 10. The intersection of exterior curtain wall assemblies and the roof slab or roof deck.
- **Revised Section 715.2 Installation.** A *fire-resistant joint system* shall be securely installed in accordance with the manufacturer's installation instructions and the listing criteria in or on the joint for its entire length so as not to impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.
- **Revised Section 715.3 Exception Language.** For *exterior walls* with a horizontal *fire separation distance* greater than 10 feet, the joint system shall be required to be tested for interior fire exposure only.

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REVIEW

- Perimeter fire containment exception – zero spandrel
- Vertical fire barrier intersection with exterior wall performance language
- Non rated assemblies
- Double wood top plate
- Electrical boxes membrane penetrations
- T-rating exceptions
- IFC maintenance requirements
- Special inspection requirements
- Clarifications, definitions

AGENDA

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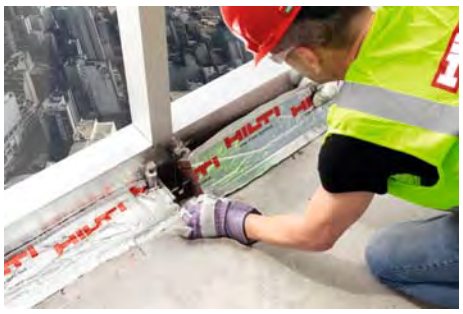
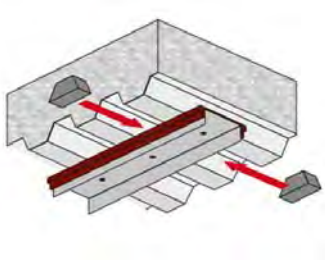
NEW CFS-EOS QUICKSEAL

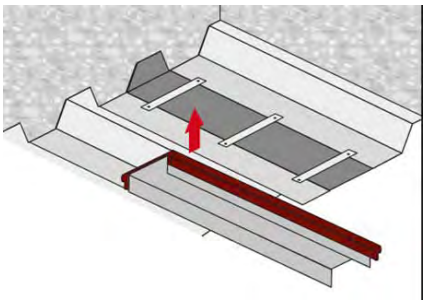
- The 1st preformed device for perimeter barrier firestopping
- Suitable for joint sizes 1.5”-5”
- Preformed firestop solutions may not require 3rd party destructive testing



NEW CFS-TTS MD

- Preformed device for top of wall joints to metal deck
- No spray or cutting mineral will
- Save time on installation and sprayer setup
- Preformed firestop solutions may not require 3rd party destructive testing





NEW CID-MD FIRESTOP SLEEVES

HILTI SUPPORTS YOUR OFFICE OR JOBSITE

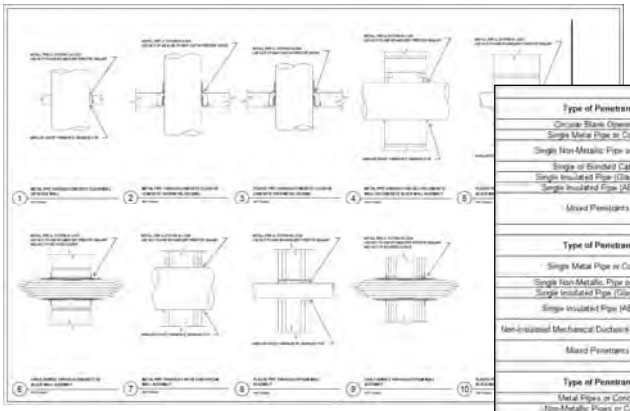
Design Phase

- Specification review
- Firestop schedules
- One-on-one consultation
- Simplified CAD details
- BIM/Revit
- Engineering Judgments
- Continuing Education (AIA, BICSI, NCSEA)

Construction and Maintenance

- Firestop Installation Training
- Coordination/Pre-con Meetings
- Web Based Documentation Manager
- Engineering Judgments
- Jobsite Observations/Walk thru
- Product and System Selection

HILTI BASIS OF DESIGN



Concrete Floors

Type of Penetrant	F-Rating (Hrs)	UL Classified System	Product
Circular Blank Openings	3	F-A-2014	CP 680-P
Single Metal Pipe or Conduit	2	F-A-1016	CP 680-P
Single Non-Metallic Pipe or Conduit	2	F-A-2053	CP 680-P
	3	F-A-2055	CP 680-P
Single or Bundled Cables	3	F-A-2033	CP 680-P
Single Insulated Pipe (Glass-Fiber)	2	F-A-5017	CP 680-P
Single Insulated Pipe (ABS/PVC)	2	F-A-5015	CP 680-P
	3	F-A-2191	CP 680-P
Mixed Penetrants	3	F-A-1023 F-A-1066 F-A-8016	CP 680-P

Concrete Block Walls

Type of Penetrant	F-Rating (Hrs)	UL Classified System	Product
	2	W-J-1067	FS ONE
Single Metal Pipe or Conduit	3	C-AJ-1226,C-AJ-1421	FS ONE
Single Non-Metallic Pipe or Conduit	2	C-AJ-2167	FS ONE
Single Insulated Pipe (Glass-Fiber)	2	W-J-5042,C-AJ-5191	FS ONE
Single Insulated Pipe (ABS/PVC)	2	W-J-1041	FS ONE
	3	C-AJ-5090	FS ONE
Non-Insulated Mechanical Ductwork Without Dampers	2	C-AJ-7111,C-AJ-7084,W-J-7022	FS ONE
Mixed Penetrants	2	C-AJ-8143	FS ONE
	3	C-AJ-8099	FS ONE

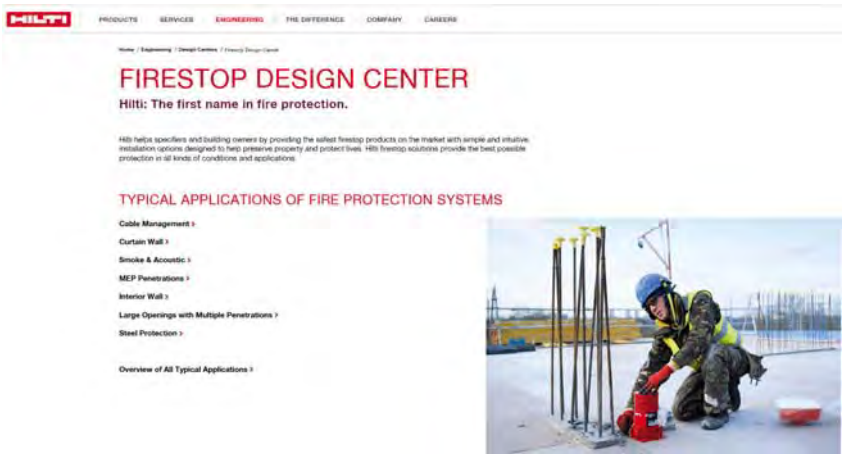
Gypsum Walls

Type of Penetrant	F-Rating (Hrs)	UL Classified System	Product
Metal Pipes or Conduit	2	W-L-1054,W-L-1206	FS ONE
Non-Metallic Pipes or Conduit	2	W-L-2126	FS ONE
Single or Bundled Cables	2	W-L-1066	FS ONE
Cable Tray	3	W-L-4060	
Insulated Pipes (Glass-Fiber)	2	W-L-5029,W-L-5056	FS ONE
Insulated Pipes (ABS/PVC)	2	W-L-5026	FS ONE
Non-Insulated Mechanical Ductwork (Without Dampers	2	W-L-7155,W-L-7042	FS ONE
Mixed Penetrants	2	W-L-8079,W-L-8071	FS ONE

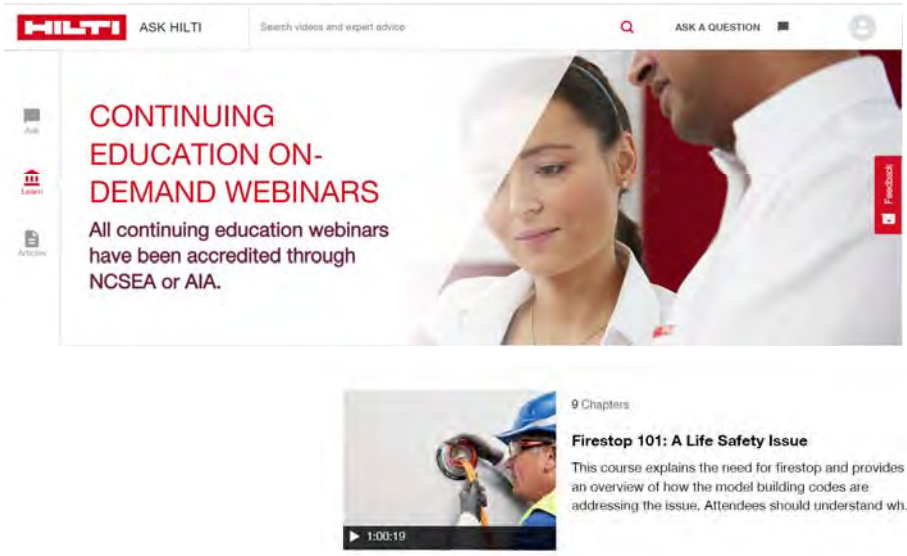
CAD Details / Firestop Schedules

HILTI ONLINE SERVICES

- www.hilti.com
- Design resources
- UL Systems Online Selector
- Product submittals
- Engineering Judgment
- Firestop Documentation Management Software
- …and much more!



ASK HILTI



- www.ask.hilti.com
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THANK YOU

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