



Fire Dampers 101

Lunch and Learn
2025-10-28

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Agenda:

- i. Introduction / Required Fire protection rating,
- ii. Installation requirements,
- iii. Inspections.

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3.1.8. and 9.10.9. Fire Separations Protection of Openings

3.1.8.1.(2). Openings in a fire separation shall be protected with closures

9.10.9.3. Openings to be protected with closures

“If there is a hole it must be protected.”

All openings such as doorways, glazing and ductwork are required to be protected with a closure conforming to Subsection 3.1.8. or 9.10.13.

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Closure means a device or assembly for closing an opening through a [fire separation](#) or an exterior wall, such as a door, a shutter, wired glass or glass block, and includes all components such as hardware, closing devices, frames and anchors.

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What's a CLOSURE?

Closure means a device or assembly for closing an opening through a fire separation or an exterior wall, such as a door, a shutter, a damper, wired glass or glass block, and includes all components such as hardware, closing devices, frames and anchors.

Wired Glass in Fixed Steel Frame



Glass Block



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What's a CLOSURE?

Door

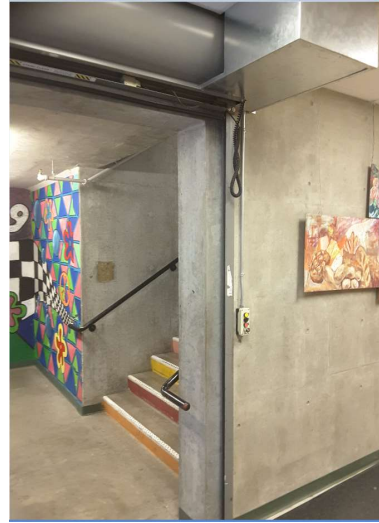


Fire Damper



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What's a CLOSURE?



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3.1.8. and 9.10.13. DOORS, DAMPERS AND OTHER CLOSURES IN FIRE SEPARATIONS

3.1.8.4. and 9.10.13.1. Closures

Openings in fire separations are to be protected with a closure, which has a fire protection rating conforming to Table 3.1.8.12. or 9.10.13.1.

In order to provide the correct fire protection rating for the closure the fire resistance rating of the fire separation must be known.

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3.1.8.4. Determination of Ratings

1) Except as permitted by Sentences (2) and 3.1.8.16.(1), the *fire-protection rating* of a *closure* shall be determined in accordance with

a) CAN/ULC-S104, “Fire Tests of Door Assemblies,”

b) CAN4-S106-M, “Fire Tests of Window and Glass Block Assemblies,” or

c) CAN/ULC-S112, “Fire Test of Fire Damper Assemblies.” (See Articles 3.1.8.17. to 3.1.8.19. for additional requirements for closures.)

There does not appear to be a cross reference from Part 9.

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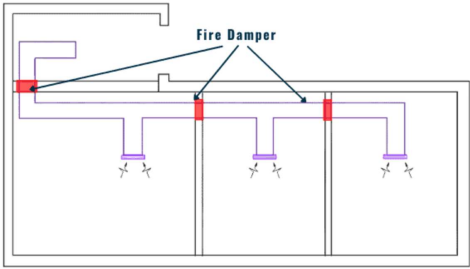
Location of Fire Dampers and Smoke Dampers 3.1.8.7.

1) Except as provided in Article 3.1.8.8., a fire damper having a fire-protection rating conforming to Sentence 3.1.8.4.(2) shall be installed in conformance with Article 3.1.8.10. in ducts or air-transfer openings that penetrate an assembly required to be a fire separation.

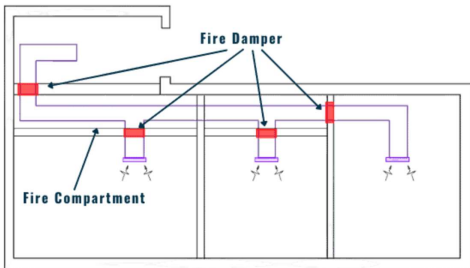
3.1.8.10. Installation of Fire Dampers

1) A fire damper shall be installed in the plane of the fire separation so as to stay in place should the duct become dislodged during a fire. (See Note A-3.1.8.10.(1).)

Method 1



Method 2



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Fire Dampers as Closures

3.1.8.8. Fire Dampers Waived (also see 9.10.13.13.(2)-(5))

- In commercial kitchen grease ducts
- In ducts passing through unrated fire separations
- In continuous ducts through fire separations between suites other than Group B, C or D occupancies
- Other locations

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3.1.8.4. and 9.10.13. DOORS, DAMPERS AND OTHER CLOSURES IN FIRE SEPARATIONS

Required <i>Fire-Resistance Rating of Fire Separation</i>	Minimum <i>Fire-Protection Rating of Closure</i>
30 or 45 min	20 min ⁽¹⁾
1 h	45 min ⁽¹⁾
1.5 h	1 h
2 h	1.5 h
3 h	2 h
4 h	3 h

9.10.13.2. Solid Core Wood Door as a Closure
1) A 45 mm thick solid core wood door is permitted to be used where a minimum fire-protection rating of 20 min is permitted or between a public corridor and a suite provided that the door conforms to CAN/ULC-S113, "Standard Specification for Wood Core Doors Meeting the Performance Required by CAN/ULC-S104 for Twenty Minute Fire Rated Closure Assemblies." (See Note A-9.10.13.2.(1).)

→

EXCEPT

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↑

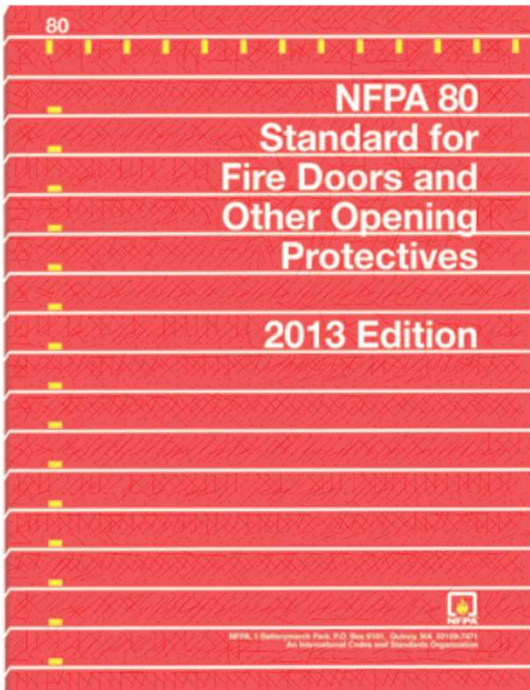
For Part 3, see 3.1.8.12.(1)

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Subsection 3.1.8. and 9.10.13.

DOORS, DAMPERS AND OTHER CLOSURES IN FIRE SEPARATIONS

Installation of closures is to conform with the provisions of Chapters 2 to 14 of NFPA 80, 2013, "Fire Doors and Fire Windows" except where specific requirements of the Building Code apply.



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Div. B-1.3.1.2. Applicable Editions

1) Where documents are referenced in this Code, they shall be the editions designated in Table 1.3.1.2.



2013

NFPA 80

Standard for Fire Doors and Other Opening Protectives

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NFPA 80 definition of a fire damper
(3.3.48 Fire Damper.)

A device installed in an air distribution system, designed to close automatically upon detection of heat, to interrupt migratory airflow and to restrict the passage of flame. Fire dampers are classified for use in either static systems or for dynamic systems, where the dampers are rated for closure under airflow.

BCBC definition of Fire Damper

means a *closure* consisting of a damper that is installed in an air distribution system or a wall or floor assembly and that is normally held open but designed to close automatically in the event of a fire in order to maintain the integrity of the *fire separation*.

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NFPA 80- Chapter 19, Installation, Testing, and Maintenance of Fire Dampers

Referencing and the ability to use **SMACNA** manual.

19.2.1.6 Retaining Angles.

19.2.1.6.1 A damper, in its sleeve, shall be retained in the wall opening using steel retaining angle(s).

19.2.1.6.2 The gauge of the retaining angle shall be in accordance with the individual fire damper's manufacturer's installation instructions or in accordance with the Sheet Metal and Air Conditioning Contractors' National Association (**SMACNA**) publication, Fire, Smoke and Radiation Damper Installation Guide for HVAC Systems.

19.2.1.7 Duct-Sleeve Connections. The rigid or breakaway duct-sleeve connection shall be installed per the manufacturer's installation instructions or in accordance with the **SMACNA** installation guideline.

FIRE, SMOKE AND RADIATION DAMPER INSTALLATION GUIDE FOR HVAC SYSTEMS



SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC.

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Maximum Size of Opening 3.1.8.6. and 9.10.13.8.

No Sprinkler protection - The max. size of an opening may be no greater than 11 m² and have no single dimension greater than 3.7 m.

Sprinkler protection - The max. size of an opening in an interior fire separation may not exceed 22 m² and have no single dimension greater than 6 m when the areas on each side are sprinklered.

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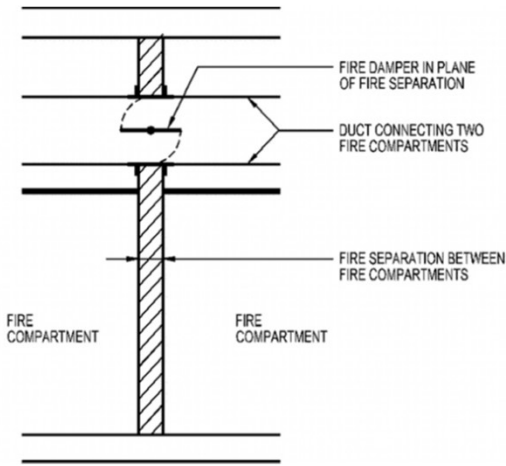
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DOORS, DAMPERS AND OTHER CLOSURES IN FIRE SEPARATIONS



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DOORS, DAMPERS AND OTHER CLOSURES IN FIRE SEPARATIONS



3.1.8.10. and 9.10.13.13. Fire Dampers

Except as permitted by Sentences (2) to (5), 9.10.5.1.(3), for ceiling membrane and 9.10.9.9.(5) where a fire damper may penetrate a fire separation, a duct that penetrates an assembly required to be a fire separation with a fire-resistance rating shall be equipped with a fire damper in conformance with Articles 3.1.8.4. and 3.1.8.10

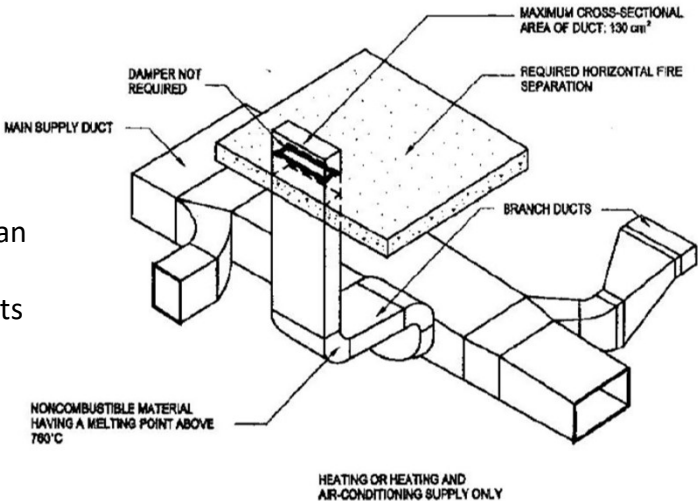
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3.1.8. and 9.10.13. DOORS, DAMPERS AND OTHER CLOSURES IN FIRE SEPARATIONS

9.10.13.13.(2) A fire damper is not required where a noncombustible branch duct pierces a required fire separation provided the duct

- a) has a melting point not below 760°C,
- b) has a cross-sectional area less than 130 cm², and
- c) supplies only air-conditioning units or combined air conditioning and heating units discharging air at not more than 1.2 m above the floor.

Also see 3.1.8.8.



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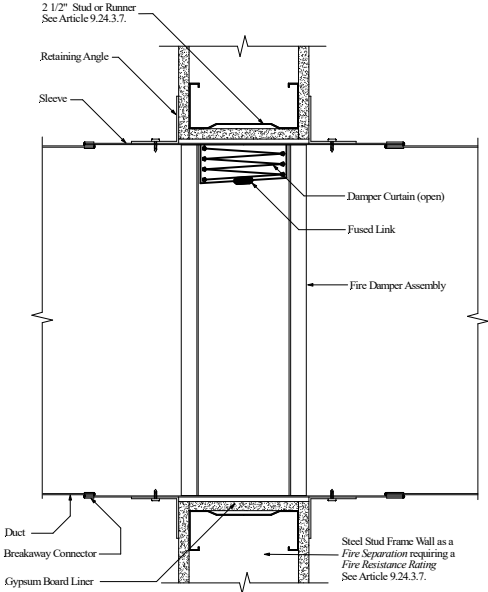
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DOORS, DAMPERS AND OTHER CLOSURES IN FIRE SEPARATIONS

Fire dampers must:

- Be arranged to close automatically on the operation of a fusible link or other heat or smoke actuated device,
- Be installed in the plane of the fire separation to stay in place should the duct be dislodged during a fire,
- Be installed in the vertical or horizontal position depending on the manner in which they were tested, and
- Be provided with an access door for inspection and resetting.

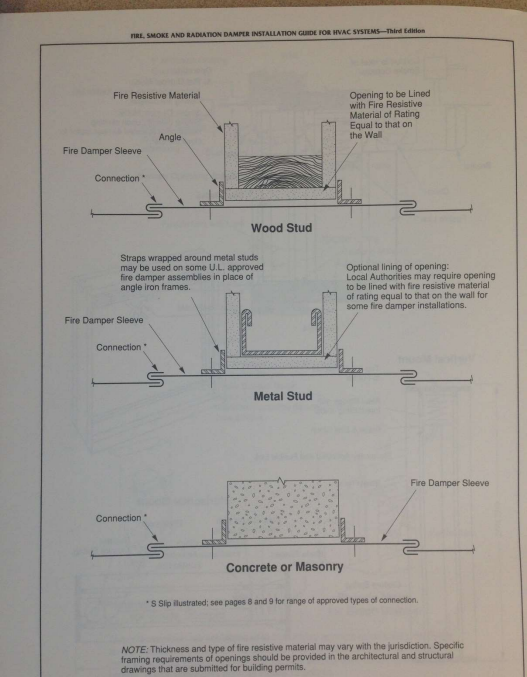


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DOORS, DAMPERS AND OTHER CLOSURES IN FIRE SEPARATIONS

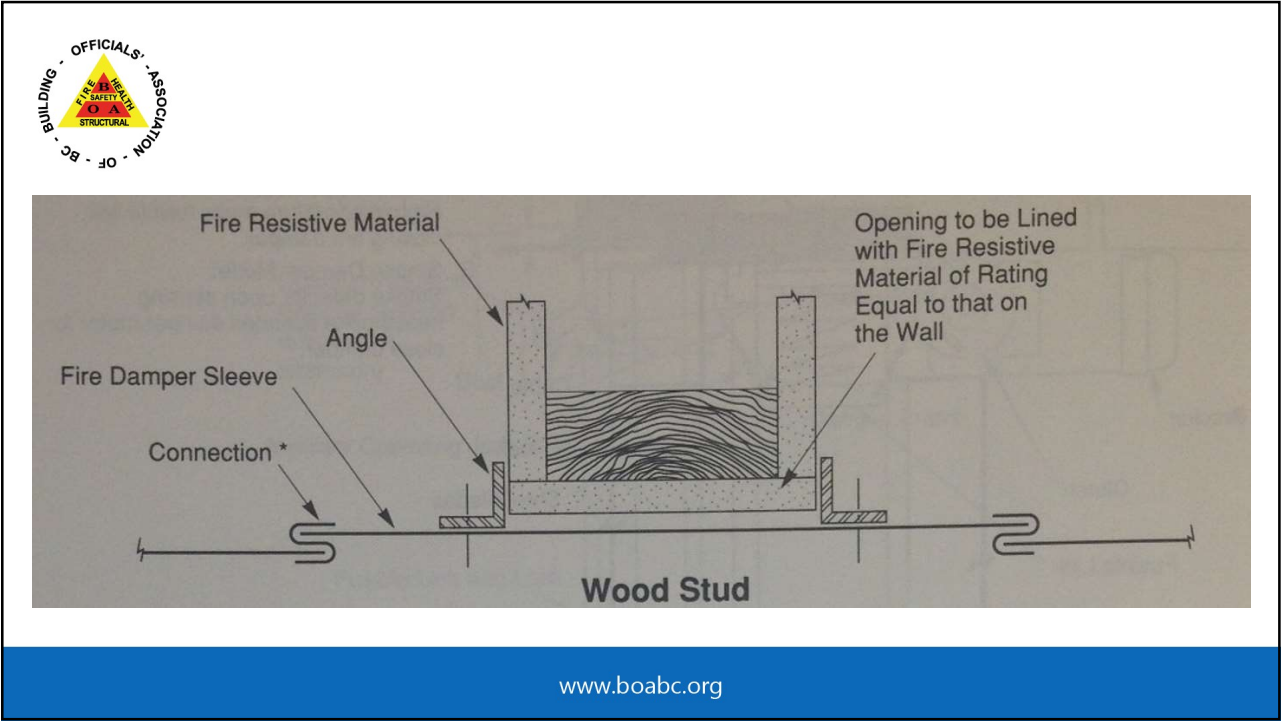
An excerpt from Sheet Metal and Air Conditioning Contractors National Association (SMACNA).
Protection of Fire Damper Opening.



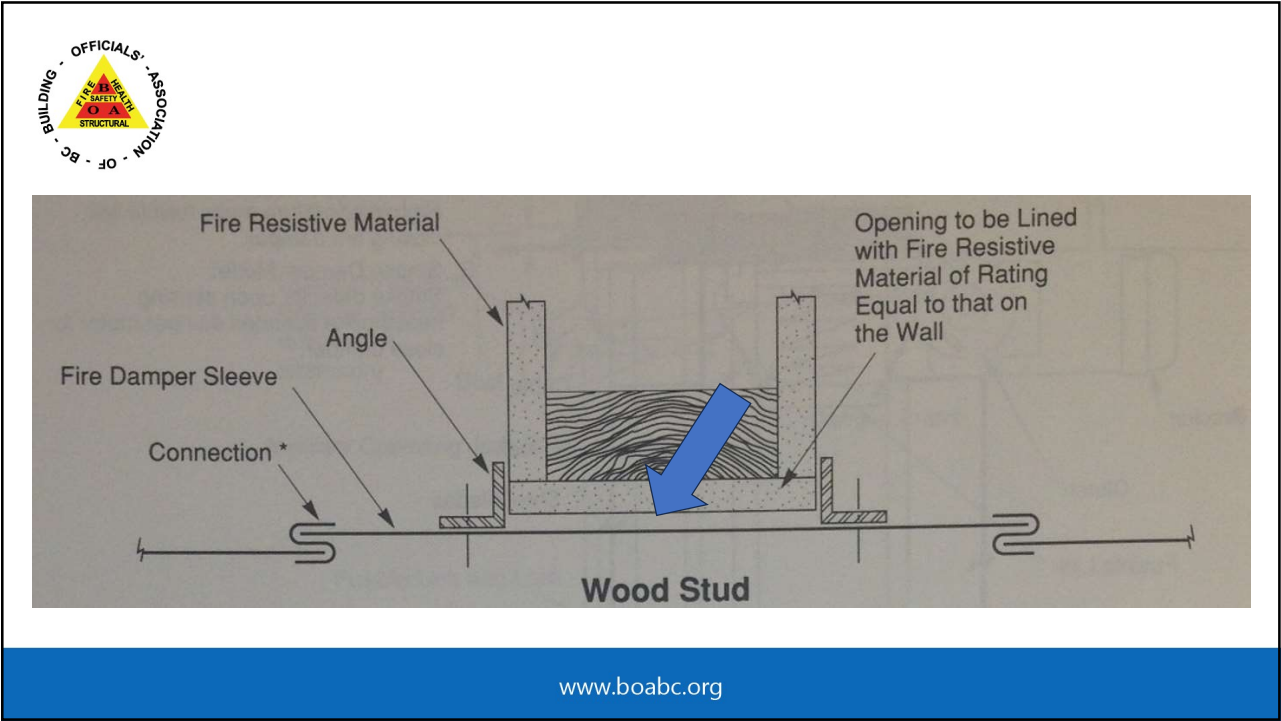
Fire Damper Opening Protection

Figure 15

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Straps wrapped around metal studs may be used on some U.L. approved fire damper assemblies in place of angle iron frames.

Optional lining of opening: Local Authorities may require opening to be lined with fire resistive material of rating equal to that on the wall for some fire damper installations.

Fire Damper Sleeve

Connection *

Metal Stud

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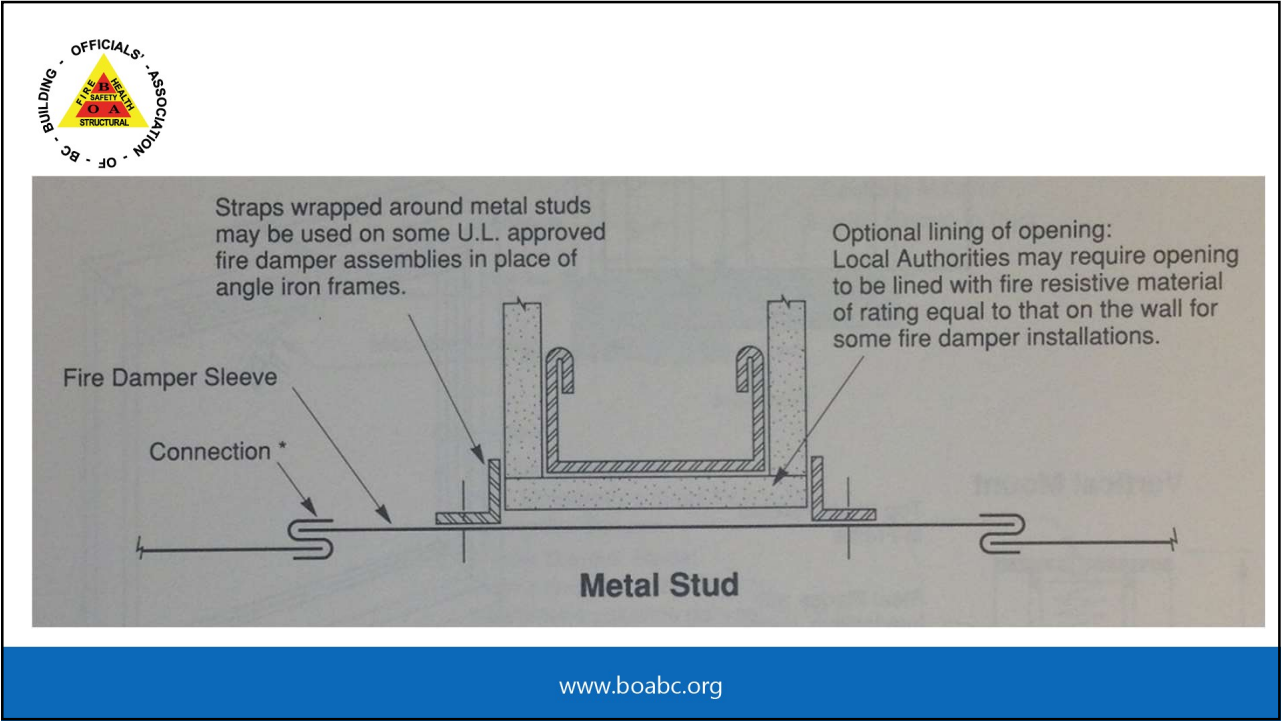
Fire Damper Sleeve

Connection *

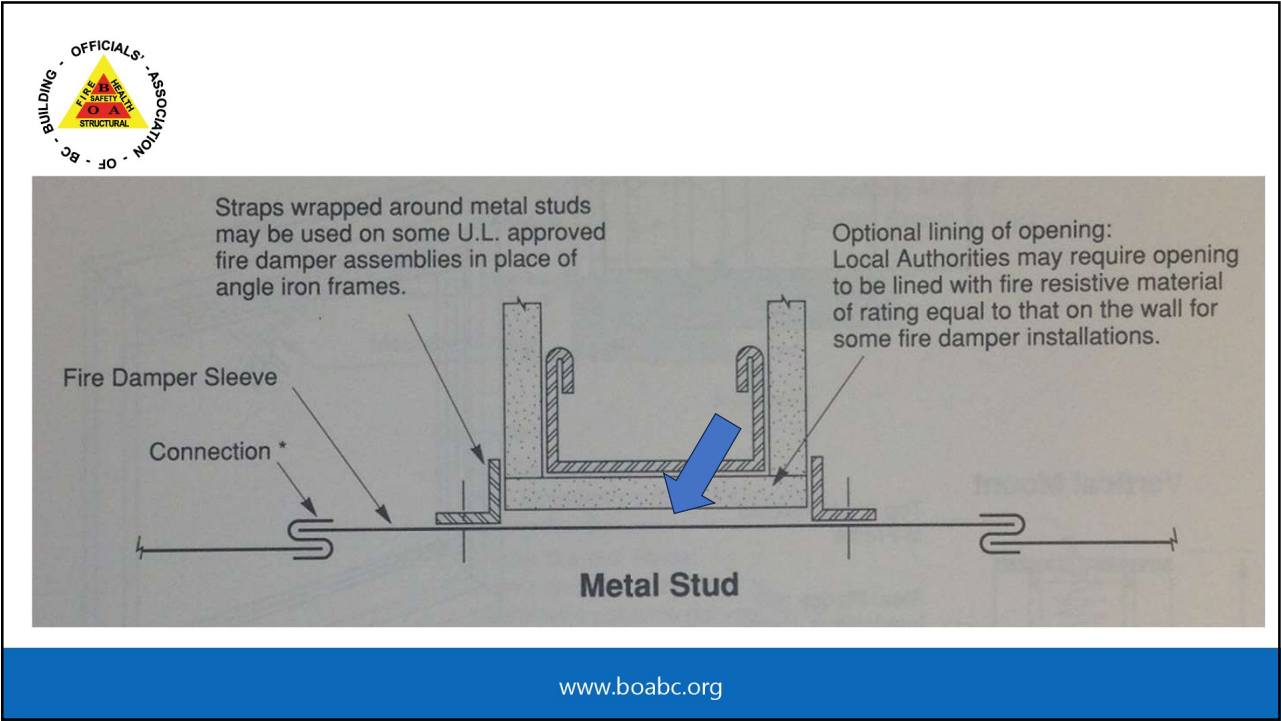
Metal Stud

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Expansion clearance between the sleeve and wall or floor shall be a minimum of 1/8" per foot (3.18 per 305) of width or height of the sleeve.

The maximum size of the opening shall be 2" (50.8) larger in either dimension than the allowable minimum size. For example; a sleeve dimension of 36" x 36" (914 x 914) shall have an opening size of 36 3/8" x 36 3/8" (924 x 924) minimum and 38 3/8" x 38 3/8" (975 x 975) maximum.

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Looks good?
Or not?

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Looks good? Or **not?**

Sealant applied in the expansion gap around the damper.

Intumescent sealants expand under elevated temperature, further undermining the intent of the expansion gap

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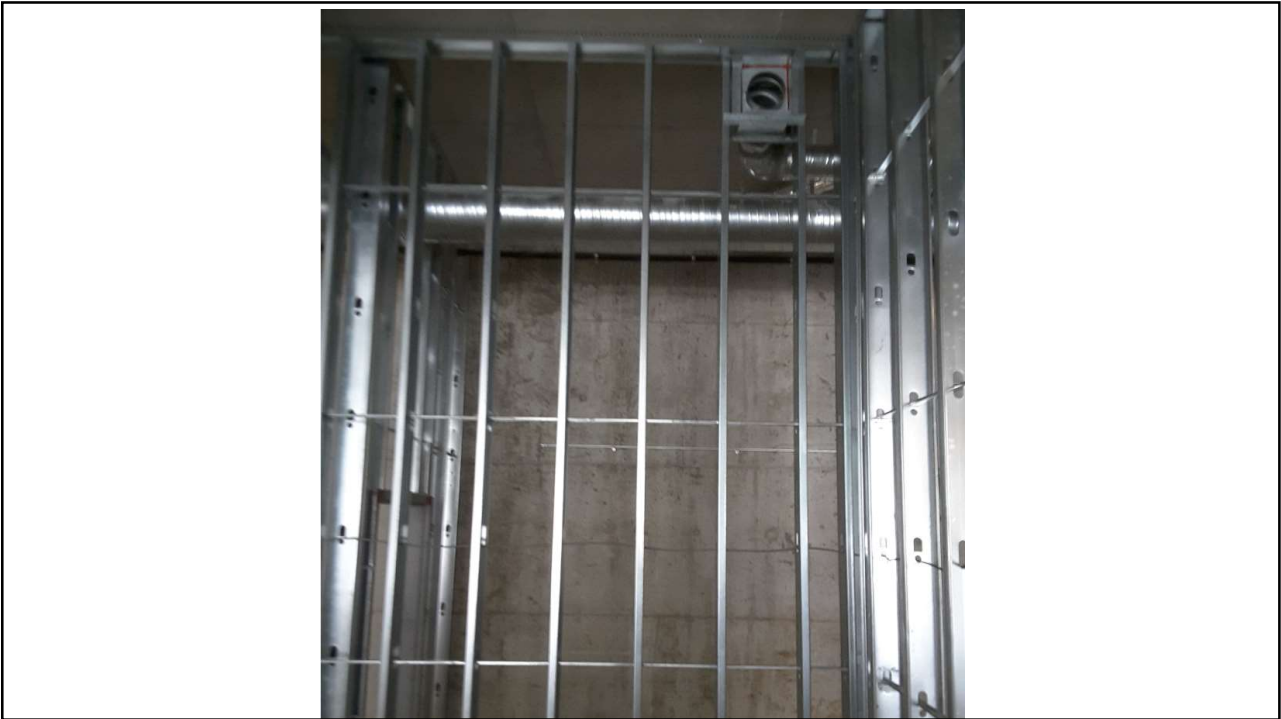


Looks good? Or not?

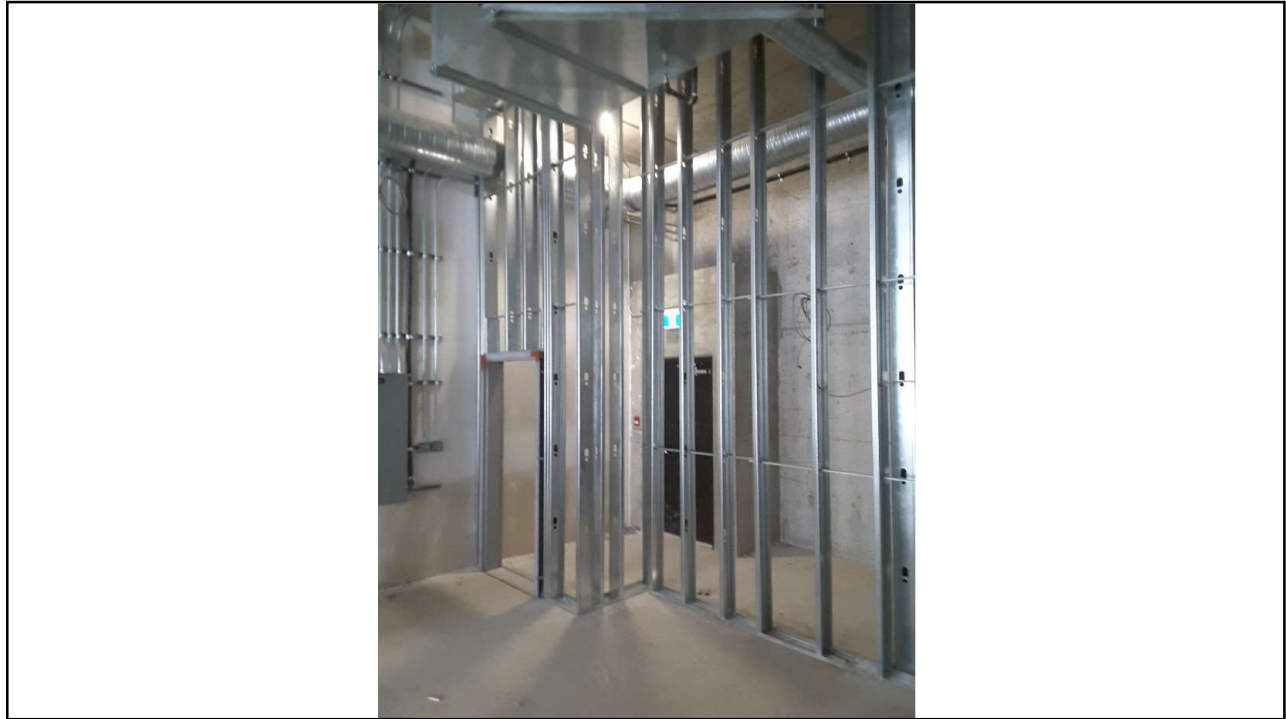
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DOORS, DAMPERS AND OTHER CLOSURES IN FIRE SEPARATIONS

Fire damper installation in a steel
stud fire separation having a 2 h
FRR.



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THE END...
Questions?
Thank you.

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