





FIRE/SMOKE DAMPERS:

When and Where are they required?

OBJECTIVES

- a) *Identify typical applications for various fire-rated assemblies*
- b) *Identify where dampers are generally required*
- c) *Identify primary code exceptions to look for in specific applications*



	2012 /2015 IBC			
	SECTION	WALL TYPE	WALL REFERENCE	TYPE OF DAMPER
	717.5.1	FIRE WALLS	706.11	FIRE
	717.5.1.1	FIRE WALL HORIZONTAL EXIT	706.11	FIRE/SMOKE
	717.5.2	FIRE BARRIERS	707.10	FIRE
	717.5.2.1	FIRE BARRIER HORIZONTAL EXIT	707.10	FIRE/SMOKE
	717.5.3	SHAFT ENCLOSURE	713.10	FIRE/SMOKE
	717.5.4	FIRE PARTITION	708.90	FIRE
	717.5.4.1	FIRE PARTITION CORRIDOR	708.90	FIRE/SMOKE
	717.5.5	SMOKE BARRIER	709.80	SMOKE
	717.5.6	EXTERIOR WALL	705.10	FIRE
	717.5.7	SMOKE PARTITION	710.80	SMOKE

RATED SEPARATION ASSEMBLY REQUIREMENTS FOR FIRE AND SMOKE PROTECTION (IBC CHAPTER 7 - 2012 edition) (uncap items intended to be designer notes for removal on each project)					
TYPE OF ASSEMBLY	VERTICAL ASSEMBLY RATING PROVIDED (HOURS)	HORIZONTAL ASSEMBLY RATING PROVIDED (HOURS) REQUIRED	ASSEMBLY COMPONENT ORIENTATION	PENETRATION ASSEMBLY REQUIREMENTS	DUCT AND AIR TRANSFER-OPENING DAMPER REQUIREMENTS
VERTICAL AND HORIZONTAL					
2-HOUR EXIT ENCLOSURES	2 (review 713.1/1009/1022/1023/1025)	2-HOUR HORIZONTAL ASSEMBLY	VERTICAL AND HORIZONTAL	N.P. (unless 1009/1022.5/1023.6 allow it)	15-HOUR LISTED FIRE/SMOKE DAMPER (717.5.3; see exceptions)
1-HOUR EXIT ENCLOSURES	1 (review 713.1/1009/1022/1023/1025)	1-HOUR HORIZONTAL ASSEMBLY	VERTICAL AND HORIZONTAL	N.P. (unless 1009/1022.5/1023.6 allow it)	15-HOUR LISTED FIRE/SMOKE DAMPER (717.5.3; see exceptions)
4-HOUR SHAFT ENCLOSURE	4-HOUR FIRE BARRIER	4-HOUR HORIZONTAL ASSEMBLY	VERTICAL AND HORIZONTAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.3)	3-HOUR LISTED FIRE/SMOKE DAMPER; (717.5.3; see exceptions)
3-HOUR SHAFT ENCLOSURE	3-HOUR FIRE BARRIER	3-HOUR HORIZONTAL ASSEMBLY	VERTICAL AND HORIZONTAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.3)	3-HOUR LISTED FIRE/SMOKE DAMPER; (717.5.3; see exceptions)
2-HOUR SHAFT ENCLOSURE	2-HOUR FIRE BARRIER	2-HOUR HORIZONTAL ASSEMBLY	VERTICAL AND HORIZONTAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.3)	15-HOUR LISTED FIRE/SMOKE DAMPER; (717.5.3; see exceptions)
1-HOUR SHAFT ENCLOSURE	1-HOUR FIRE BARRIER	1-HOUR HORIZONTAL ASSEMBLY	VERTICAL AND HORIZONTAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.3)	15-HOUR LISTED FIRE/SMOKE DAMPER; (717.5.3; see exceptions)
SMOKE BARRIER	1-HOUR FIRE BARRIER	1-HOUR HORIZONTAL ASSEMBLY	VERTICAL AND HORIZONTAL	UL1479 FIRESTOP SYSTEM INCLUDING AIR LEAKAGE (714.3)	LISTED SMOKE DAMPER (717.5.5; see exceptions)
SMOKE BARRIER (NFPA 75; see chapter 5)	1-HOUR FIRE BARRIER	1-HOUR HORIZONTAL ASSEMBLY	VERTICAL AND HORIZONTAL	UL1479 FIRESTOP SYSTEM INCLUDING AIR LEAKAGE (714.3)	15-HOUR LISTED FIRE /SMOKE DAMPER
SMOKE PARTITION (see 710; use for IBC incidental sprinkler exception)	NONE REQUIRED	NONE REQUIRED	VERTICAL AND HORIZONTAL	MATERIAL TO LIMIT FREE PASSAGE OF SMOKE	LISTED SMOKE DAMPER FOR AIR-TRANSFER OPENINGS AND PROTECT ALL AS PENETRATION ASSEMBLY (710.8; see exceptions)
VERTICAL					
4-HOUR FIRE WALLS (or) FIRE BARRIERS	4 (see Tables 706.4 and 707.3.10)	N/A (or) 4-HOUR SUPPORTING CONSTRUCTION (see 707.5)	VERTICAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.3)	3-HOUR LISTED FIRE DAMPER (717.5.1/2) (not permitted on lot line)
3-HOUR FIRE WALLS (or) FIRE BARRIERS	3 (see Tables 706.4 and 707.3.10)	N/A (or) 3-HOUR SUPPORTING CONSTRUCTION (see 707.5)	VERTICAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.3)	3-HOUR LISTED FIRE DAMPER (717.5.1/2) (not permitted on lot line)
2-HOUR FIRE WALLS (or) FIRE BARRIERS	2 (see Tables 706.4 and 707.3.10)	N/A (or) 2-HOUR SUPPORTING CONSTRUCTION (see 707.5)	VERTICAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.3)	15-HOUR LISTED FIRE DAMPER (717.5.1/2) (not permitted on lot line)
1-1/2-HOUR FIRE WALLS (or) FIRE BARRIERS	1 1/2 (2002)	N/A (or) 2-HOUR SUPPORTING CONSTRUCTION (see 707.5)	VERTICAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.3)	15-HOUR LISTED FIRE DAMPER (717.5.1/2) (not permitted on lot line)
1-HOUR FIRE BARRIERS (OTHERS)		1 NONE REQUIRED (see 707.5)	VERTICAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.3)	15-HOUR LISTED FIRE DAMPER; (717.5.2; see exceptions)
FIRE PARTITIONS (CORRIDORS)	1 or 1/2	NONE REQUIRED (see 708.4)	VERTICAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.3)	15-HOUR LISTED FIRE/SMOKE DAMPER; (717.5.4; see exceptions)
FIRE PARTITIONS (OTHERS)	1 or 1/2	1-HOUR SUPPORTING CONSTRUCTION (see 708.4)	VERTICAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.3)	15-HOUR LISTED FIRE DAMPER; (717.5.4; see exceptions)
3-HOUR EXTERIOR WALLS		3 N/A	VERTICAL	NONE REQUIRED	3-HOUR LISTED FIRE DAMPER (717.5.6)
2-HOUR EXTERIOR WALLS		2 N/A	VERTICAL	NONE REQUIRED	15-HOUR LISTED FIRE DAMPER (717.5.6)
1-HOUR EXTERIOR WALLS		1 N/A	VERTICAL	NONE REQUIRED	15-HOUR LISTED FIRE DAMPER (717.5.6)
HORIZONTAL					
***4-HOUR HORIZONTAL ASSEMBLY (see 711.4 opening; vertical opening, stairs)	N/A	4 (see 711.3)	HORIZONTAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.4)	SHAFT ENCLOSURE (717.6; see exceptions)
***3-HOUR HORIZONTAL ASSEMBLY	N/A	3 (see 711.3)	HORIZONTAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.4)	SHAFT ENCLOSURE (717.6; see exceptions)
***2-HOUR HORIZONTAL ASSEMBLY	N/A	2 (see 711.3)	HORIZONTAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.4)	SHAFT ENCLOSURE (717.6; see exceptions)
***1-HOUR HORIZONTAL ASSEMBLY	N/A	1 (see 711.3)	HORIZONTAL	ASTM-E814 OR UL1479 FIRESTOP SYSTEM (714.4)	SHAFT ENCLOSURE (717.6; see exceptions)
revisit fire barriers 10 types; review section 707.3 for various locations					
HORIZONTAL - VERTICAL OPENINGS				714	717.6

SEPARATION ASSEMBLY PROVIDED FOR FIRE AND SMOKE PROTECTION (IBC CHAPTER 7 – 2012 edition, UNLESS INDICATED OTHERWISE) (uncap items intended to be designer notes for removal on each project)			
OCCUPANCY CLASSIFICATION	WHERE REQUIRED	TYPE OF ASSEMBLY	CODE REFERENCE
ANY	BUILDING SEPARATION	4-HOUR FIRE WALL	IBC 706 (review provisions)
ANY	SEPARATED OCCUPANCIES (see 508.4)	4-HOUR FIRE BARRIER AND 4-HOUR HORIZONTAL ASSEMBLY	IBC 707.3.9/508.4 (review provisions)
ANY	FIRE AREAS	4-HOUR FIRE BARRIER AND 4-HOUR HORIZONTAL ASSEMBLY	IBC 707.3.10 (review provisions)
ANY	HORIZONTAL EXIT	2-HOUR MINIMUM FIRE WALL (or) FIRE BARRIERS AND HORIZONTAL ASSEMBLY	IBC 707.3.5/1025.1 (review provisions)
ANY	INTERIOR EXIT STAIRWAYS/RAMP(S) (EXCEEDING 3 STORIES) AND EXIT PASSAGEWAYS	2-HOUR EXIT ENCLOSURES	IBC 707.3.2/1022.18; 707.3.4/1023.3 (review many exceptions); NFPA 101-7.1.3.2.1
ANY	INTERIOR EXIT STAIRWAYS/RAMP(S) (3 STORIES OR LESS) AND EXIT PASSAGEWAYS	1-HOUR EXIT ENCLOSURES	IBC 707.3.2/1022.18; 707.3.4/1023.3 (review many exceptions)
ANY	SHAFT ENCLOSURE EXCEEDING 3 STORIES	2-HOUR SHAFT ENCLOSURE	IBC 707.3.1/713.4; NFPA 101-8.6.5(1)
ANY	EXIT ACCESS STAIRWAY ENCLOSURES EXCEEDING 3 STORIES	2-HOUR SHAFT ENCLOSURE	IBC 707.3.3/1009.3.1.2 (review exceptions of 1009)
ANY	SHAFT ENCLOSURE 3 STORIES OR LESS	1-HOUR SHAFT ENCLOSURE	IBC 707.3.1/713.4; NFPA 101-8.6.5(2)
ANY	EXIT ACCESS STAIRWAY ENCLOSURES 3 STORIES OR LESS	1-HOUR SHAFT ENCLOSURE	IBC 707.3.3/1009.3.1.2 (review exceptions of 1009)
ANY	VERTICAL OPENINGS (see 712)	(varies)	IBC 712
ANY	ATRIUMS	1-HOUR FIRE BARRIER AND/OR 1-HOUR HORIZONTAL ASSEMBLY	IBC 707.3.6/404.6 (review exceptions)
ANY	MECHANICAL ROOMS (HEATING EQUIPMENT OR REFRIGERANT MACHINERY)	1-HOUR FIRE BARRIER AND 1-HOUR HORIZONTAL ASSEMBLY	IBC 509.4 (review provisions & exceptions for sprinklers)
ANY	WASTE, LINEN COLLECTION, AND LAUNDRY ROOMS OVER 100 S.F.	1-HOUR FIRE BARRIER AND 1-HOUR HORIZONTAL ASSEMBLY	IBC 509.4 (review provisions & exceptions for sprinklers)
ANY	FIRE PUMP ROOM	2-HOUR FIRE BARRIER AND 2-HOUR EXIT ENCLOSURE (or) 1-HOUR FIRE BARRIER AND EXIT ENCLOSURE	NFPA 20-4.12.11& 4.12.2 (2013)
ANY	ELECTRICAL ROOMS WITH EQUIPMENT OVER 600 VOLTS	3-HOUR FIRE BARRIER AND 3-HOUR HORIZONTAL ASSEMBLY	NFPA 70-110.31(A) (review exceptions) (2011)
ANY	ELECTRICAL ROOMS WITH TRANSFORMERS OVER 112.5kVA	1-HOUR FIRE BARRIER AND 1-HOUR HORIZONTAL ASSEMBLY	NFPA 70-450.21(B) (review exceptions) (2011)
ANY	ELECTRICAL TRANSFORMER VAULTS	3-HOUR FIRE BARRIER AND 3-HOUR HORIZONTAL ASSEMBLY	NFPA 70-450.42 (review exceptions for sprinklers)
ANY	INFORMATION TECHNOLOGY EQUIPMENT ROOMS	SMOKE BARRIER (NFPA 75)	NFPA 75-5.1.3 (review provisions of chapter 5) (2013)
ANY	EPS EMERGENCY GENERATOR ROOM	2-HOUR FIRE BARRIER AND 2-HOUR HORIZONTAL ASSEMBLY	NFPA 110-7.2.1 (2013)
ASSEMBLY	STORAGE	SMOKE PARTITION	
BUSINESS	STORAGE	SMOKE PARTITION	NFPA 101-38.3.2
GROUP A, E, I, AND R	HYDROGEN CUTOFF ROOMS	2-HOUR FIRE BARRIER AND 2-HOUR HORIZONTAL ASSEMBLY	IBC 509.4
GROUP A, E, I, AND R	BATTERY STORAGE ROOMS FOR STANDBY, EMERGENCY, OR UPS POWER	2-HOUR FIRE BARRIER AND 2-HOUR HORIZONTAL ASSEMBLY	IBC 509.4
GROUP B, F, M, S, AND GROUP B, F, M, S, AND U	HYDROGEN CUTOFF ROOMS	1-HOUR FIRE BARRIER AND 1-HOUR HORIZONTAL ASSEMBLY	IBC 509.4
	BATTERY STORAGE ROOMS FOR STANDBY, EMERGENCY, OR UPS POWER	1-HOUR FIRE BARRIER AND 1-HOUR HORIZONTAL ASSEMBLY	IBC 509.4
GROUP E AND I-2	LABS AND VOCATIONAL SHOPS	1-HOUR FIRE BARRIER AND 1-HOUR HORIZONTAL ASSEMBLY	IBC 509.4 (review provisions & exceptions for sprinklers)
GROUP H	CONTROL AREAS (see 414.2)	2-HOUR FIRE BARRIER AND/OR 2-HOUR HORIZONTAL ASSEMBLY	IBC 707.3.8/414.2 (review provisions)
GROUP I-2 AND AMBULATORY HEALTH CARE	WASTE AND LINEN COLLECTION ROOMS	1-HOUR FIRE BARRIER AND 1-HOUR HORIZONTAL ASSEMBLY	IBC 509.4
GROUP I-3	PADDED CELL ROOMS	1-HOUR FIRE BARRIER AND 1-HOUR HORIZONTAL ASSEMBLY	IBC 509.4
varies	SMOKE COMPARTMENT	SMOKE BARRIER	reference varies

FIRE-RATED HORIZONTAL/FLOOR ASSEMBLIES (§717.1→§717.6.1/2)

Sample Applications → *Type IA, IB, IIA, IIIA, or VA construction; occupancy separations between floors; ceilings of fire-rated enclosures or individual spaces*

Damper Required

- One (1) floor penetrated (2-stories); Fire Damper at each floor line unless in a shaft complying with §713; **fire-rated shafts req'd** for Group I-2 & I-3 (§717.6.1)
- Two (2) or three (3) floors penetrated; Fire Damper req'd at floor line for all ducts ≥ 6in (Exc.2); see exceptions at right
- Four (4) or more floors penetrated (5-stories or more); **fire-rated shaft req'd** complying with §713
- Ceiling Radiation Damper req'd at fire-rated ceiling duct/diffuser/grille outlets unless noted otherwise at right (§717.6.2)

Damper NOT Required (NR)

review 717.1.1

- Penetrations of fire-rated assemblies not requiring dampers must comply with §714 per 717.1.1 (EG: firestopping or sealant)
- Fire damper NR at floor line if 26gage duct is within wall cavity/chase, only serves one dwelling unit directly to exterior, is not >4in with sum of areas not >100sqin per 100sf of floor, the penetration assembly complies with ASTM E119 or UL 263 under 0.01in pressure, **AND** ceiling radiation dampers complying with §717.6.2.1 are provided for fire-rated ceiling openings (§717.6.1 Exceptions)
- Ceiling Radiation Dampers NR if providing a fire-rated shaft complying with §713, the penetration assembly complies with ASTM E119 or UL 263, or only serve an individual dwelling or tenant space (§717.6.2 Exceptions)

NON-FIRE-RATED HORIZONTAL/FLOOR ASSEMBLIES (§717.1→717.6.3)

Applications → *Type IIB, IIIB, IV, or VB construction; non-separated occupancies or non-fire-rated spaces*

Damper Required

- Up to two (2) floors penetrated (3-stories); Fire Damper at each floor line unless in a fire-rated shaft complying with §713
- Three (3) or more floors penetrated (4-stories or more); **fire-rated shaft req'd** complying with §713

Damper NOT Required (NR)

review 717.1.1.1

- One (1) floor penetrated; fill annular space
- Duct serves individual dwelling unit only

Duct and Air Transfer Openings
FIRE WALLS (§717.5.1; 706)

Application → *separates buildings as a structurally independent wall*

Damper Required

- Fire dampers always req'd
- Smoke damper also req'd where serving as a Horizontal Exit (§717.5.1.1) → Combo Fire/Smoke Damper recommended

Damper NOT Required (NR)

- No exceptions

NOTES:

Duct and Air Transfer Openings

FIRE BARRIERS (§717.5.2; 707)

Example Applications → *shafts, exit stairs/ramps, exit passageway, horizontal exit, separated occupancies, fire areas, atrium, incidental uses, hazmat control areas*; NOTE: exceptions exist for fire barriers also

Damper Required

- Duct penetration is NOT permitted for stairways, ramps, exit passageways
****review 1022.4/1023.6****
- Fire dampers are req'd for supply, relief, or exhaust ducts unless noted otherwise at right
- Combo Fire/Smoke damper req'd where also serving as a Horizontal Exit (§717.5.2.1); only a Smoke Damper is req'd if a Fire Damper is NR as noted at right

Damper NOT Required (NR) ***review xxx***

- Fire damper NR if penetration assembly is tested and complies with ASTM E119 or UL 263 (Exc.1)
- Fire or Smoke dampers NR for smoke control systems complying with §909 (Exc.2)
- Fire damper NR where using 26gage duct in fully sprinklered and penetrating 1-hr Fire Barrier in any occupancy except Group H; NOTE: flex ducts are NOT permitted for this exception (Exc.3) → **what about flexible vibration isolation duct connections at AHU or other equipment??**

NOTES:

FIRE-RATED SHAFT ENCLOSURES (§717.5.3; 713)

Example Applications → *floor penetrations NP to have vertical opening, exit stairs/ramps, exit passageway, refuse/laundry chutes, elevators hoistways/lobbies; NOTE: exceptions exist for vertical openings*

Damper Required

- Fire dampers are req'd for supply, relief, or exhaust ducts unless noted otherwise at right
- Smoke dampers req'd in any duct for Group A,E,F,H,I,M,S,U (Exc.2), even for kitchen/dryer/bath/toilet ducts (Exc.5)
- Note: Combo Fire/Smoke dampers should be used where it's determined that both a Fire and Smoke damper are req'd at a location → *it is possible that only either a fire or smoke damper are exempted and the other type is still req'd*

Damper NOT Required (NR) ***review xxx***

- Fire damper NR for 22in vertical subduct where shaft is continuously exhausted (Exc.1.1) → *smoke damper still req'd for occupancy Groups listed at left*
- Fire damper NR if penetration assembly complies with ASTM E119 or UL 263 (Exc.1.2) → *smoke damper still req'd for occupancy Groups listed at left*
- Fire or Smoke dampers NR for smoke control systems complying with §909 (Exc.1.3 & 4)
- Fire or Smoke damper NR for 2hr shafts in parking garages (Exc.1.4 & 3)
- Smoke damper NR in Group B,R if fully sprinklered for kitchen/dryer/bath/toilet 26gage exhaust, 22in vertical subduct, or where the shaft is continuously exhausted (Exc.2)

Duct and Air Transfer Openings

FIRE PARTITIONS (§717.5.4; 708)

Example Applications → *Separating dwelling units, sleeping units, malls/tenant separations, corridors (next slide), elevator lobbies, NOTE: exceptions exist for fire partitions also*

Damper Required

- Ducts and air transfer openings that penetrate *fire partitions* shall be protected with *listed fire dampers* installed in accordance with their listing.

Damper NOT Required (NR) ***review xxx***

- **Exceptions:** In occupancies other than Group H, *fire dampers* are not required where any of the following apply:
 - 1. Corridor walls in buildings equipped throughout with an *automatic sprinkler system (13 & 13R)* & the duct is protected as a *through penetration (IBC 714)*.
 - 2. Tenant partitions in *covered and open mall buildings* where the walls do not extend to the underside of the floor or roof sheathing, slab or deck above.
 - 3. The duct system is constructed of *approved materials (IMC)* and the duct penetrating the wall complies with all of the following requirements:
 - 3.1. < 100 square inches (0.06 m²).
 - 3.2. steel a minimum of 0.0217 inch (0.55 mm) in thickness.
 - 3.3. Does not communicate the *corridor* with adjacent spaces or rooms.
 - 3.4. Installed above a ceiling.
 - 3.5. Does not terminate at a wall register in the fire-resistance-rated wall.
 - 3.6. A minimum 12-inch-long (305 mm) by 0.060-inch-thick (1.52 mm) steel duct sleeve, steel retaining angles and the *annular space* is filled with *mineral wool* batting on all sides.
 - 4. *Fire-resistance rating* of wall penetrated 1 hour or less, buildings equipped throughout with an *automatic sprinkler system (13 & 13R)*. Minimum sheet steel not less than No. 26 gage thickness and continuous from the air-handling appliance or equipment to the air outlet and inlet terminals.

NOTES:

Duct and Air Transfer Openings

CORRIDORS (§717.5.4.1; 1018)

Applications → *malls, health care type (I-2), detentional/prisons (I-3), hazmat (H), residential (R), etc*

Damper Required

- A *listed smoke damper* designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a *corridor* enclosure required to have smoke and draft control doors in accordance with Section 716.5.3.

TABLE 1018.1
CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system ^c
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R	Greater than 10	Not Permitted	0.5
I-2 ^a , I-4	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1 ^b

a. For requirements for occupancies in Group I-2, see Sections 407.2 and 407.3.

b. For a reduction in the *fire-resistance rating* for occupancies in Group I-3, see Section 408.8.

c. Buildings equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2 where allowed.

Damper NOT Required (NR) ***review xxx***

- Exceptions:**
- 1. *Smoke dampers* are not required where the building is equipped throughout with an *approved* smoke control system in accordance with Section 909, and *smoke dampers* are not necessary for the operation and control of the system.
- 2. *Smoke dampers* are not required in *corridor* penetrations where the duct is constructed of steel not less than 0.019 inch (0.48 mm) in thickness and there are no openings serving the *corridor*.

NOTES:

- 407.3.1 GROUP I-2. CORRIDOR DOORS, OTHER THAN THOSE IN A WALL REQUIRED TO BE RATED BY SECTION 509.4 OR FOR THE ENCLOSURE OF A VERTICAL OPENING OR AN EXIT, SHALL NOT HAVE A REQUIRED FIRE PROTECTION RATING AND SHALL NOT BE REQUIRED TO BE EQUIPPED WITH SELF-CLOSING OR AUTOMATIC-CLOSING DEVICES, BUT SHALL PROVIDE AN EFFECTIVE BARRIER TO LIMIT THE TRANSFER OF SMOKE AND SHALL BE EQUIPPED WITH POSITIVE LATCHING. ROLLER LATCHES ARE NOT PERMITTED. OTHER DOORS SHALL CONFORM TO SECTION 716.5.

Duct and Air Transfer Openings

SMOKE BARRIERS (§717.5.5)

Applications → *health care type (I-2), detentional/prisons (I-3), underground buildings, floor assemblies*

Damper Required

- A *listed smoke damper* designed to resist the passage of smoke shall be provided at each point a duct or air transfer opening penetrates a *smoke barrier*. *Smoke dampers* and *smoke damper* actuation methods shall comply with Section 717.3.3.2.

Damper NOT Required (NR) ***review xxx***

- **Exception:** *Smoke dampers* are not required where the openings in ducts are limited to a single *smoke compartment* and the ducts are constructed of steel.

Duct and Air Transfer Openings

EXTERIOR WALLS (\$717.5.6)

Applications → See IBC Table 602 below for examples of rated exterior walls

Damper Required

- Ducts and air transfer openings in fire-resistance-rated *exterior walls* required to have protected openings in accordance with Section 705.10 shall be protected with *listed fire dampers* installed in accordance with their listing.

Damper NOT Required (NR)

review xxx

- Exception:** None provided.

TABLE 602
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE^{a, b}

FIRE SEPARATION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP H ^c	OCCUPANCY GROUP A, B, E, F-2, I, R, S-2 ^d , U ^e	OCCUPANCY GROUP A, B, E, F-2, I, R, S-2 ^d , U ^e
X < 5 ^c	All	3	2	1
5 ≤ X < 10	IA	3	2	1
	Others	2	1	1
10 ≤ X < 30	IA, IB	2	1	1 ^d
	IIB, VB	1	0	0
	Others	1	1	1 ^d
X ≥ 30	All	0	0	0

For SI: 1 foot = 304.8 mm.

a. Load-bearing exterior walls shall also comply with the fire-resistance rating requirements of Table 601.

b. For special requirements for Group U occupancies, see Section 406.3.

c. See Section 706.1.1 for party walls.

d. Open parking garages complying with Section 406 shall not be required to have a fire-resistance rating.

e. The fire-resistance rating of an exterior wall is determined based upon the fire separation distance of the exterior wall and the story in which the wall is located.

f. For special requirements for Group H occupancies, see Section 415.5.

g. For special requirements for Group S aircraft hangars, see Section 412.4.1.

h. Where Table 705.8 permits nonbearing exterior walls with unlimited area of unprotected openings, the required fire-resistance rating for the exterior walls is 0 hours.

NOTES:

- DAMPERS ARE NOT CURRENTLY TESTED, OR LISTED, FOR EXTERIOR APPLICATIONS IN THE UNITED STATES (E.G., CONTINUED EXPOSURE TO WEATHER, CORROSION AND PARTICULATE HAVE NOT BEEN ADDRESSED BY UL555 & UL555S). CONSULT AHJ FOR APPROVED ALTERNATIVE PROVISIONS (E.G., FIRE SHUTTERS, ETC.).
- EXAMPLE APPLICATION LOCATIONS WILL INCLUDE INTAKE/EXHAUST LOUVERS WITHIN 10 FEET OF A PROPERTY LINE, EXTERIOR WALLS WITHIN 4 FEET OF A FIRE WALL/BARRIER (CITE SCOPING SECTION FOR REVIEW – 706.5).

Duct and Air Transfer Openings

SMOKE PARTITIONS (§717.5.7)

Applications → *incidental uses, corridors in health care, elevator lobbies*

Damper Required

- A *listed smoke damper* designed to resist the passage of smoke shall be provided at each point that an air transfer opening penetrates a smoke partition. *Smoke dampers* and *smoke damper* actuation methods shall comply with Section 717.3.3.2.

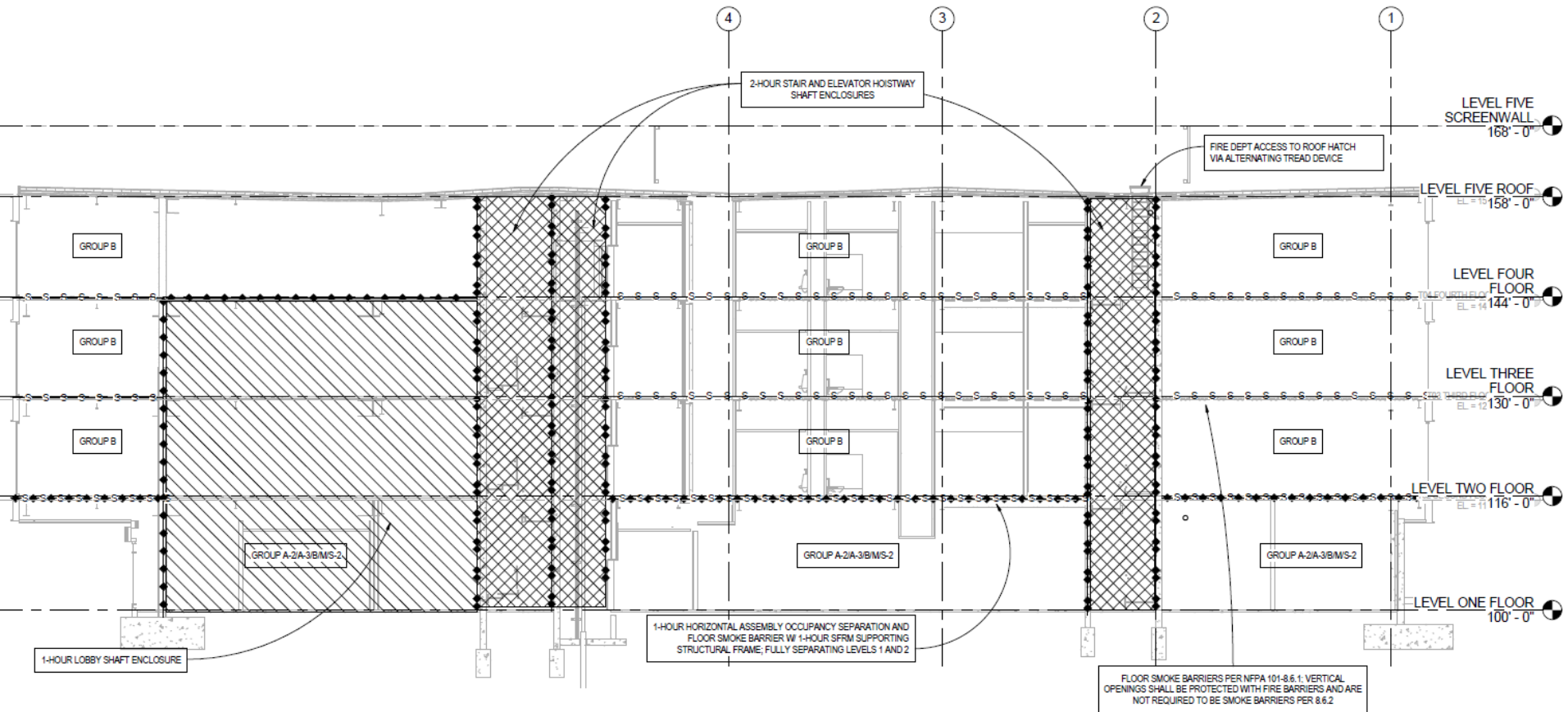
Damper NOT Required (NR)

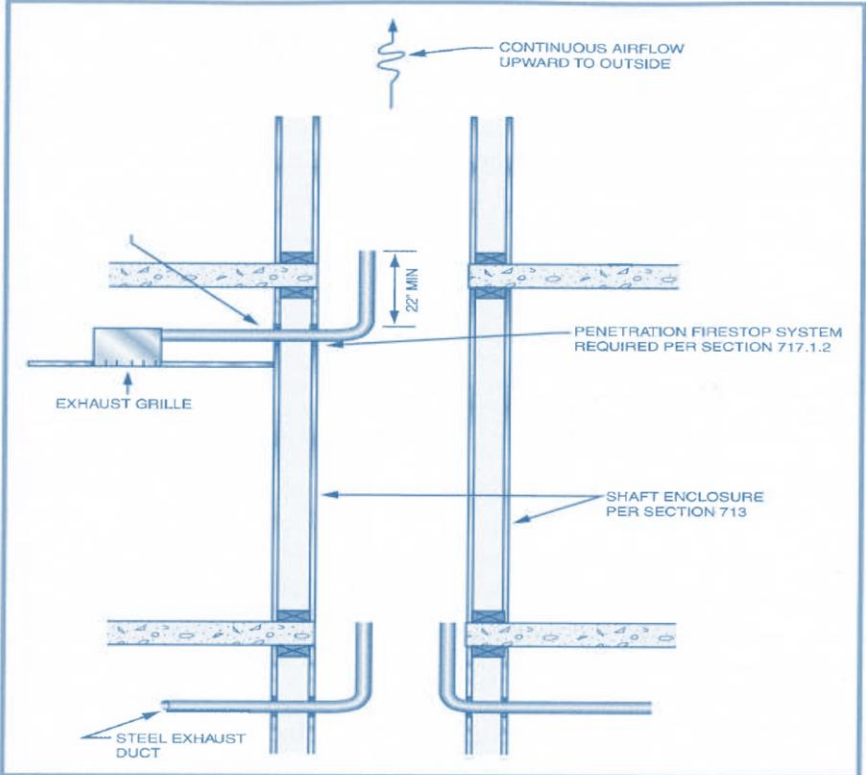
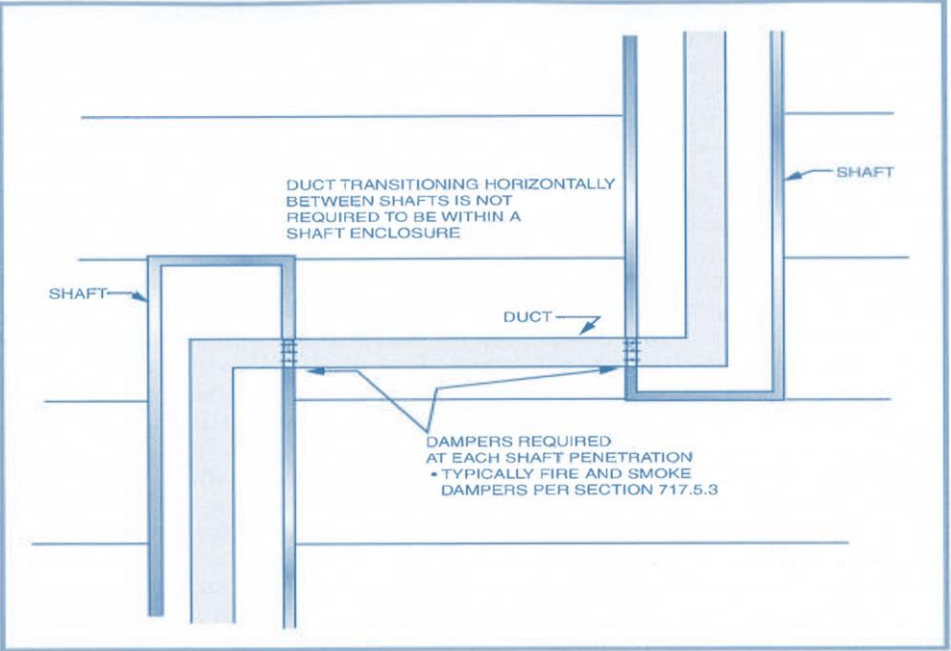
review xxx

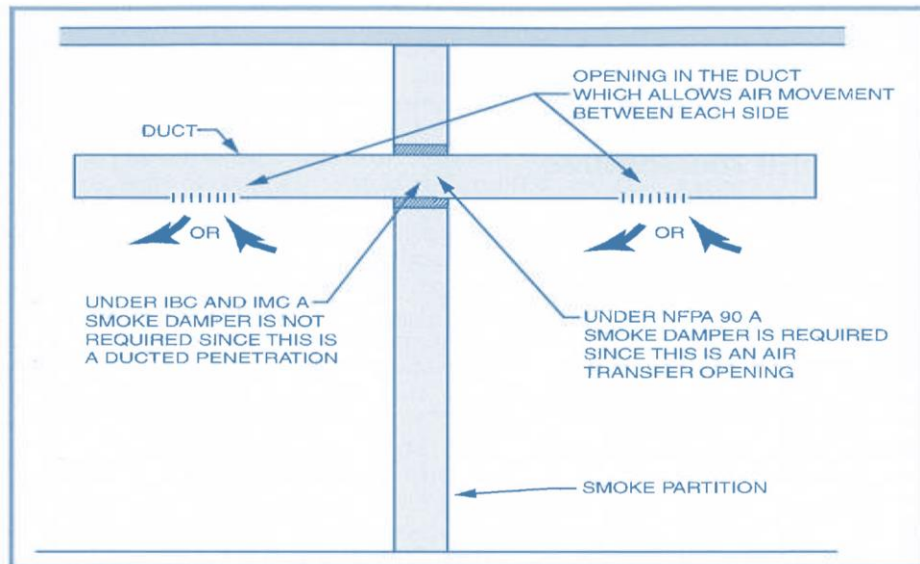
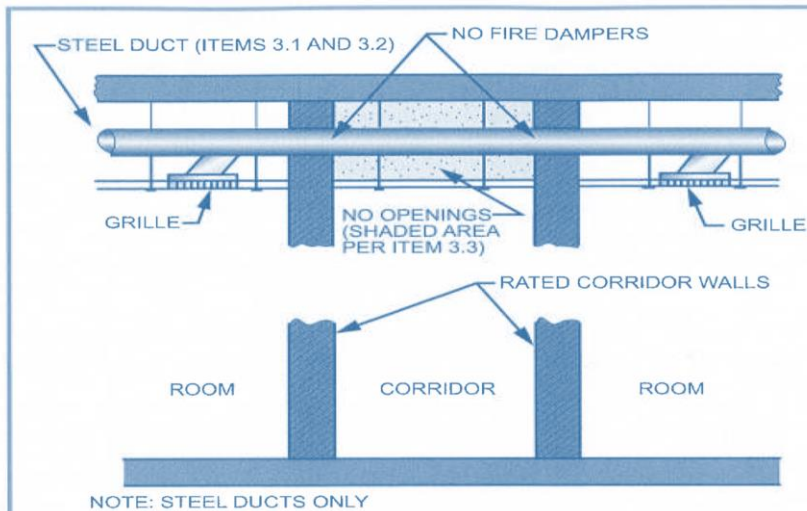
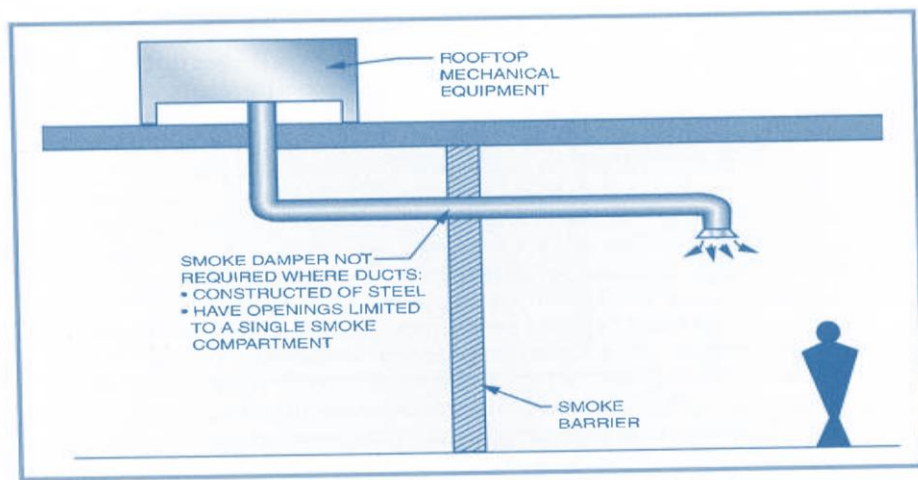
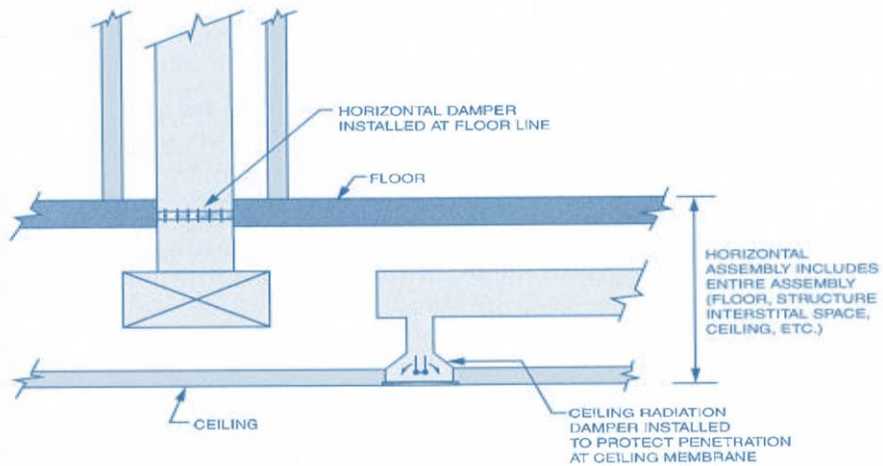
- **Exception:** Where the installation of a *smoke damper* will interfere with the operation of a required smoke control system in accordance with Section 909, *approved* alternative protection shall be utilized.

NOTES:

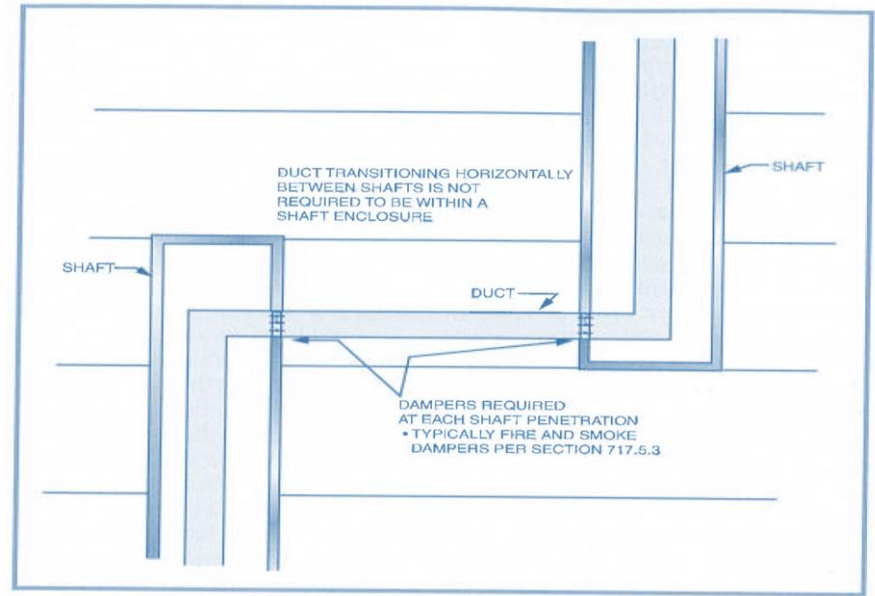
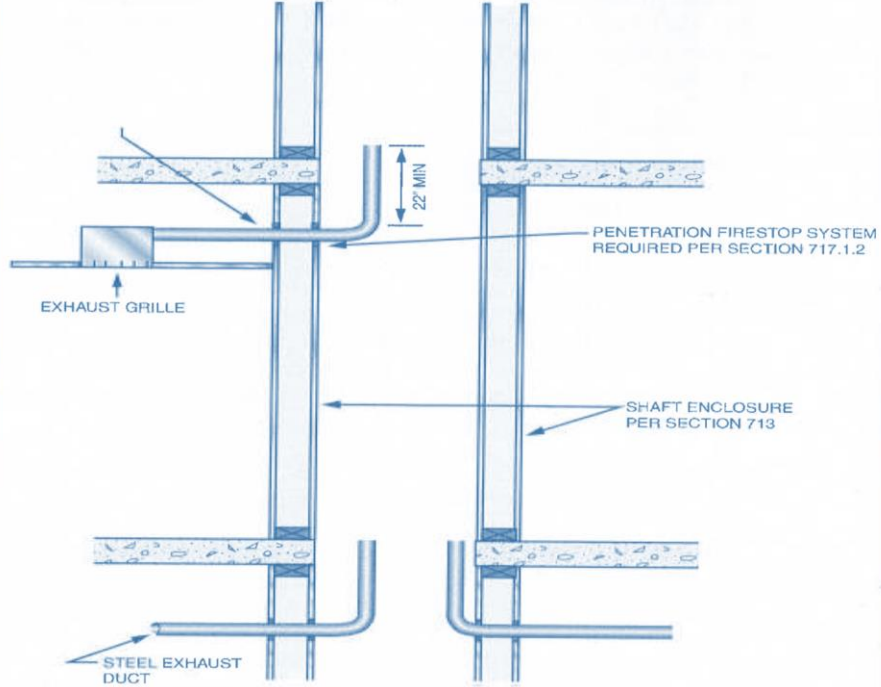
1. 710.8. THE SPACE AROUND A DUCT PENETRATING A SMOKE PARTITION SHALL BE FILLED WITH AN APPROVED MATERIAL TO LIMIT THE FREE PASSAGE OF SMOKE. AIR TRANSFER OPENINGS IN SMOKE PARTITIONS SHALL BE PROVIDED WITH A SMOKE DAMPER COMPLYING WITH SECTION 717.3.2.2.
2. 1.407.3.1 CORRIDOR DOORS. CORRIDOR DOORS, OTHER THAN THOSE IN A WALL REQUIRED TO BE RATED BY SECTION 509.4 OR FOR THE ENCLOSURE OF A VERTICAL OPENING OR AN EXIT, SHALL NOT HAVE A REQUIRED FIRE PROTECTION RATING AND SHALL NOT BE REQUIRED TO BE EQUIPPED WITH SELF-CLOSING OR AUTOMATIC-CLOSING DEVICES, BUT SHALL PROVIDE AN EFFECTIVE BARRIER TO LIMIT THE TRANSFER OF SMOKE AND SHALL BE EQUIPPED WITH POSITIVE LATCHING. ROLLER LATCHES ARE NOT PERMITTED. OTHER DOORS SHALL CONFORM TO SECTION 716.5. (SECTION 407 APPLIES TO GROUP I-2)
3. 2.1018.1 CONSTRUCTION. CORRIDORS SHALL BE FIRE-RESISTANCE RATED IN ACCORDANCE WITH TABLE 1018.1. THE CORRIDOR WALLS REQUIRED TO BE FIRE-RESISTANCE RATED SHALL COMPLY WITH SECTION 708 FOR FIRE PARTITIONS. (SECTION 1018 ADDRESSES CORRIDOR RATINGS: 5 EXCEPTIONS LISTED. TABLE 1018.1 DEFINES REQUIRED RATINGS. OCCUPANCY GROUPS A, B, E, F, M, S & U IN AN NFPA 13 BUILDING DO NOT REQUIRE RATED CORRIDORS. NON-SPRINKLER PROTECTED BUILDINGS WITH > 30 PERSON OCCUPANT LOAD & 2 REQUIRED EXITS (OCC. LOAD OR TRAVEL DISTANCE) REQUIRE 1 HOUR RATING.)

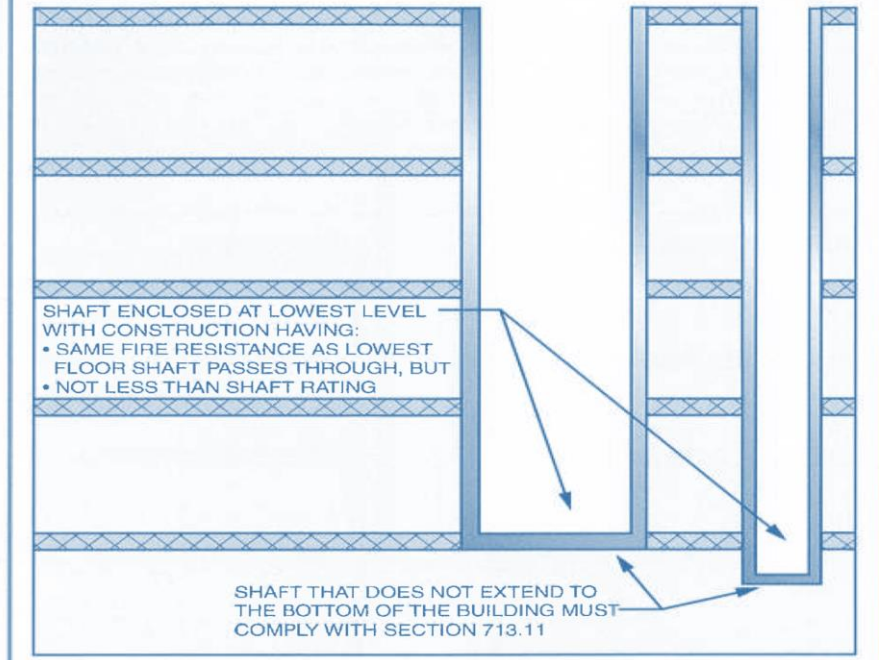
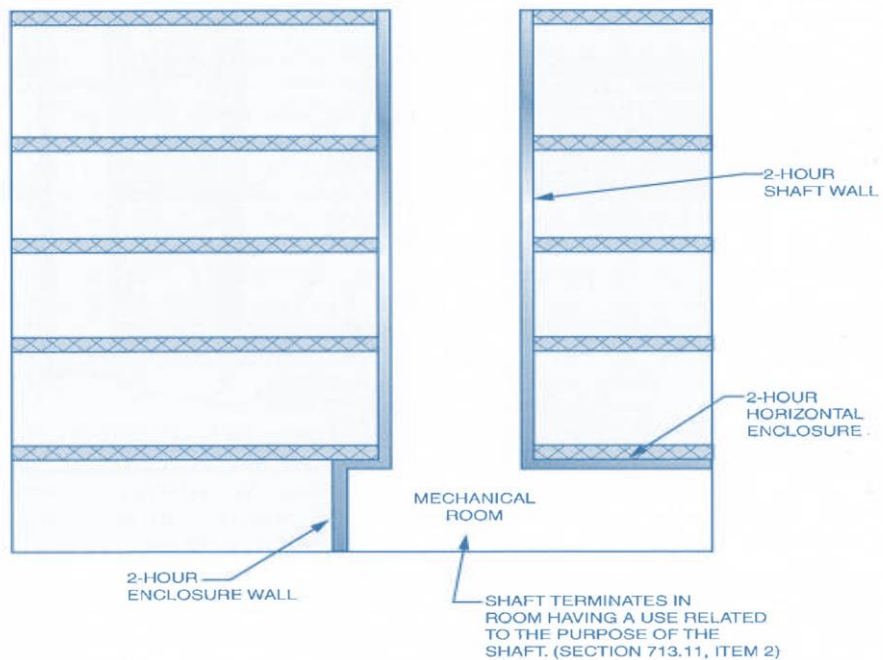


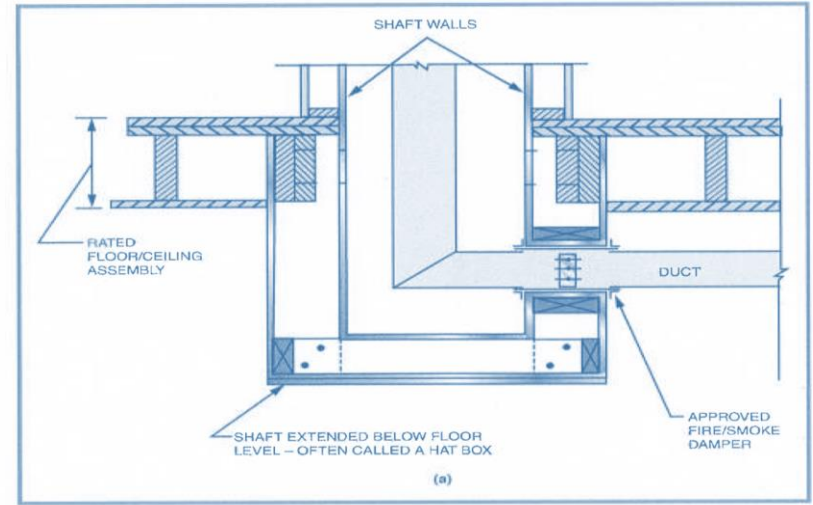
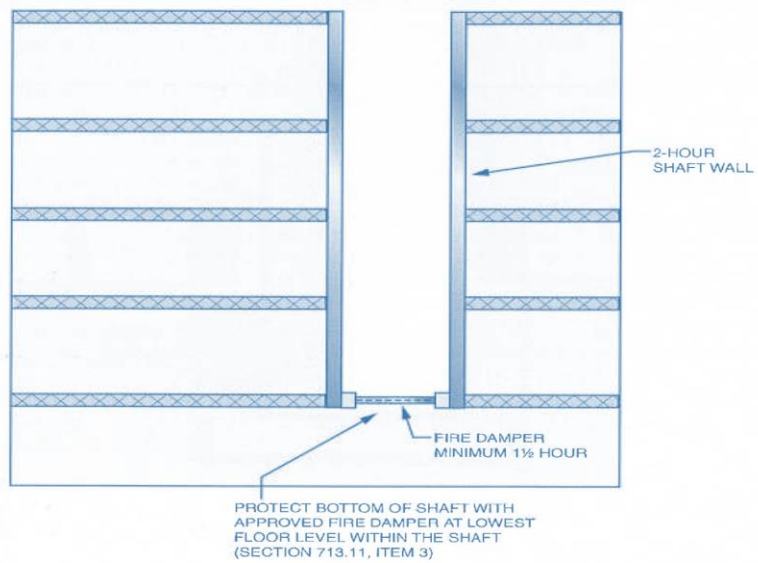




CONTINUOUS AIRFLOW
UPWARD TO OUTSIDE









Discussion

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