

Fire/Smoke Dampers

Ontario Building Code 2020: New Provisions for Fire & Smoke Dampers

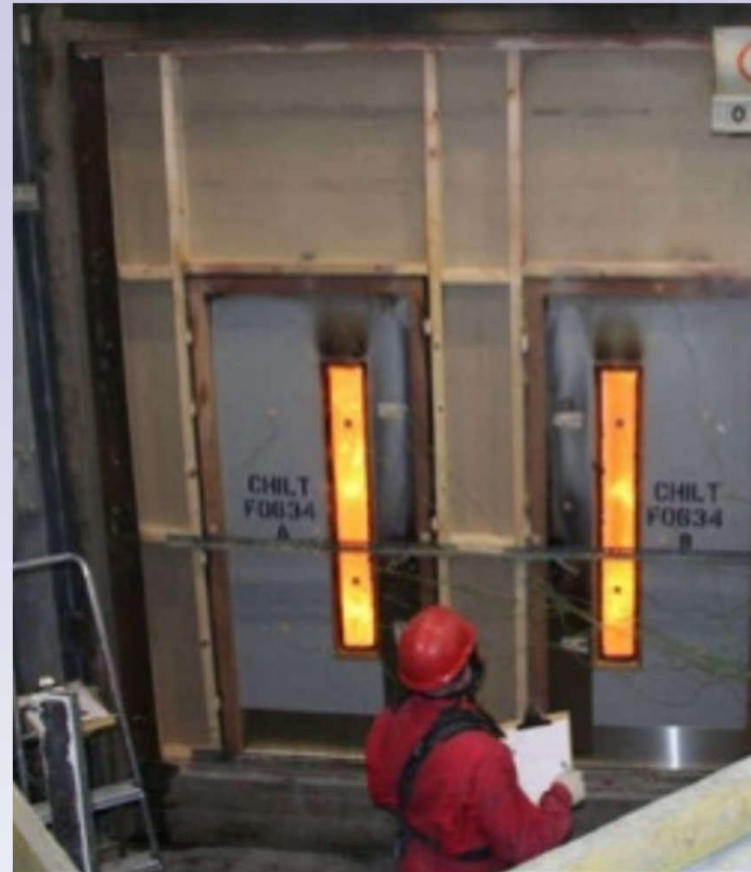


Fire & Smoke Dampers

- Fire Separation & Fire Compartments
- Fire Dampers
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Fire Separation

- Fire Separation is the method of protecting buildings from the spread of fire to adjoining rooms.
- Fire Separation is required when the function of a room meets the criteria outlined in section 3.3 of the OBC, or in their respective governing standard.



Fire Separation

- Fire Separation is achieved by separating a space with approved materials listed to have a fire rating.
 - Walls, Floors & Ceilings
 - Doors
 - Ducts & Penetrations
- Fire-rated Building Materials come with different ratings, commonly ranging from 20 minutes to 3 hours.



FIRE DAMPER FOR USE IN DYNAMIC SYSTEMS
FIRE RESISTANCE RATING 1-1/2 HOUR
No. _____

Fire Compartments

- Fire Compartments: an architectural method to protect adjacent spaces from flame & smoke migration.
- Fire Compartments are required when the function of a room meets the criteria outlined in section 3.3 of the OBC, or in their respective governing standard.



Fire Dampers

- Fire Dampers:
 - Close automatically upon detection of heat to maintain fire separation
 - Driving mechanism is typically a fuseable link that melts when the minimum temperature is met
 - Low-Cost. Come in a variety of types



Smoke Dampers

- Smoke Dampers:
 - Close automatically upon detection of smoke to maintain fire separation
 - Electronically or pneumatically driven, controlled by smoke detectors and/or fire alarm systems
 - When activated, smoke dampers must meet CAN/ULC-S112.1 “Leakage Rated Dampers for use in Smoke-Controlled Systems” and conform to Class I, II, or III of that standard.
 - Significant cost relative to fire dampers



Combination Fire/Smoke Dampers

- Fire/Smoke Dampers:
 - Close automatically upon detection of heat or smoke to maintain fire separation
 - Electronically or pneumatically driven, controlled by electronic fuse link and smoke detectors and/or fire alarm systems
 - Used when both Fire & Smoke Dampers are required
 - Significant cost relative to fire dampers



OBC 3.1.8.7

Location of Fire & Smoke Dampers

- Fire Dampers:
 - A fire damper having a fire-protection rating shall be installed in ducts or air-transfer openings that penetrate an assembly required to be a fire separation.
- Smoke Dampers:
 - A smoke damper or a combination smoke/fire damper shall be installed in ducts or air-transfer openings that penetrate an assembly required to be a fire separation, where the fire separation:
 - a. separates a public corridor
 - b. contains an egress door referred to in Sentence 3.4.2.4.(2),
 - c. serves an assembly, care, care and treatment, detention or residential occupancy, or
 - d. is installed to meet the requirements of Clause 3.3.1.7.(1)(b) or Sentence 3.3.3.5.(4) or 3.3.4.11.(4)

OBC 3.1.8.8

Fire Dampers Waived

- The requirement for Fire Dampers may be waived if any sentence of section 3.1.8.8 are met. This includes:
 - Ducts serving commercial kitchen equipment
 - Ducts that penetrate a vertical fire separation that are not required to have a fire-resistance rating
 - Non-combustible duct that penetrates a horizontal fire separation that is not required to have a fire resistant rating
 - Refer to section 3.1.8.8 for full list

OBC 3.1.8.8A

Smoke Dampers Waived

- The requirement for Smoke Dampers may be waived if any of section 3.1.8.8A is met. This includes:
 - Ducts serving commercial kitchen equipment
 - Duct inlet & outlet openings that serve not more than 1 fire compartment
 - Ducts that that penetrate a vertical fire separation referred to in Clause 3.3.1.7.(1)(b) or in Sentence 3.3.3.5.(4), provided,
 - The movement of air is continuous, and
 - the configuration of the air-handling system prevents the recirculation of exhaust or return air under fire emergency conditions.
 - Refer to section 3.1.8.8A for full list

OBC 3.1.8.9A (New)

Installation of Fire & Smoke Dampers

- Smoke Dampers:
 - When used as a closure in an air transfer application, smoke dampers are to be installed in the plane of the fire separation.
 - When used as a closure in a duct along with a fire damper (or combination smoke/fire damper), the damper must be installed within 610mm of the plane of the fire separation.
 - Configured to close automatically upon receiving a signal from an adjacent smoke detector located within 1.5 meters of the duct or opening, either on both sides of the air transfer opening or downstream of the damper in a duct.
 - Require a tightly fitted access door for inspection and resetting of the device.

OBC 3.3.1.7

Protection of Areas with a Barrier-Free Path of Travel

- Details the requirements for fire compartments and protection in spaces with barrier-free access.
- No significant changes to this section for 2020.

OBC 3.3.3.5

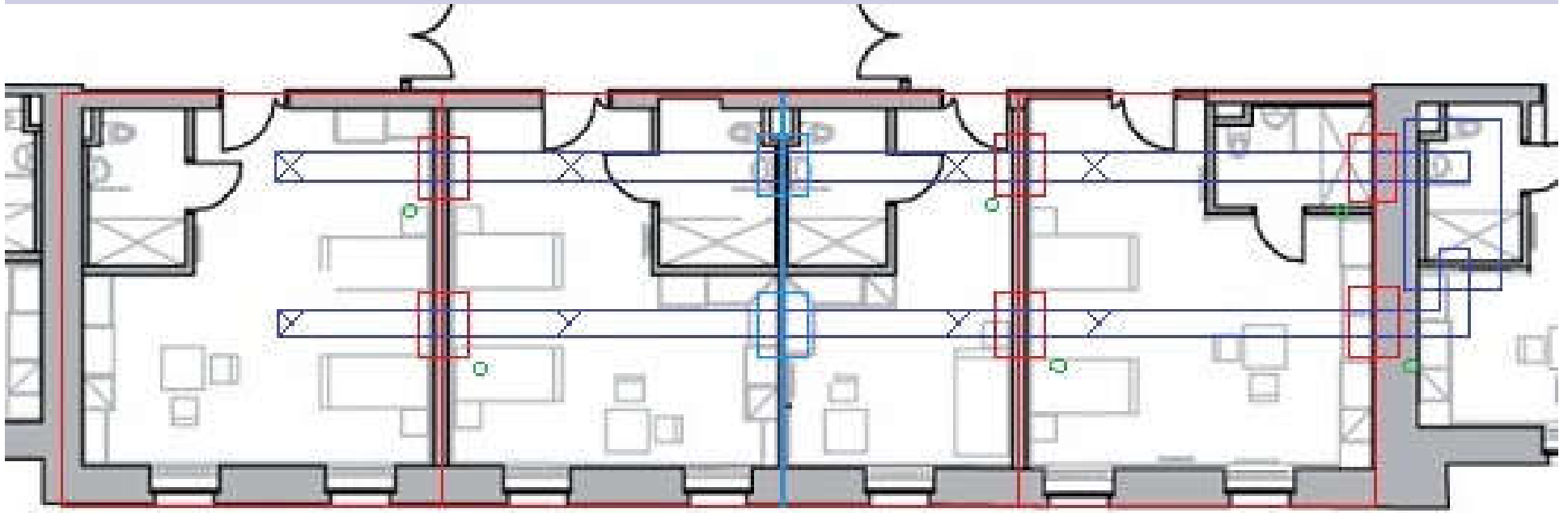
Protection of Areas with a Barrier-Free Path of Travel

- Details the requirements for fire compartments in Hospitals and Long-Term Care Homes.
- No significant changes to this section for 2020.

Smoke Damper Example

- Long Term Care Facility (3.3.3.5)
 - Three fire compartments separate four living spaces
 - Air handler services all spaces, supplies and returns all rooms
 - Where do we install the dampers?

Smoke Damper Example



Summary

- **Fire Dampers:**
 - Fusible link dampers, close when max temperature is reached.
 - Maintain integrity of fire separation
 - Except where exempt, FDs are required for duct penetrations through all fire separations.
- **Smoke Dampers**
 - Motorized or pneumatically driven dampers. Close when smoke is detected.
 - Maintain integrity of fire separation
 - Except where exempt, smoke dampers are required for duct