



# Fire Blocks in Walls and Roof Spaces

## Guideline

Guideline ESP - 09

### Purpose

This guideline has been developed to help improve consistency with the installation, education and enforcement of fire blocks installed in walls and unoccupied roof spaces in construction involving residential Part 9 buildings.



### Code Reference

Current National Building Code – Alberta Edition Division B Section 9.10.16.

2015 Illustrated Users Guide – NBC 2015 Part 9 of Division B Housing and Small Buildings Article 9.10.16.



### Summary

The requirements within this Guideline are applicable to fire blocking within residential buildings under Part 9 of the current National Building Code – Alberta Edition.



### Interpretation

This Guideline provides clarity and direction from Rocky View County on their interpretation of the requirement for fire blocks in walls and attic spaces. Fire blocks must be provided at all interconnections between concealed vertical and horizontal spaces in interior coved ceilings, dropped ceilings and soffits where the exposed construction materials within the concealed spaces have a surface flame-spread rating greater than 25. Based on the information provided within this Guideline, fire blocks shall be installed in these locations, in the following methods.

#### 1) Definitions

- a) Fire Block – A fire block means a material, component or system that restricts the spread of fire within a concealed space or from a concealed space to an adjacent space.
- b) Attics and Soffits – In unsprinklered buildings of combustible construction, concealed spaces containing exposed materials with a surface flame-spread rating greater than 25, shall be separated by fire blocks into compartments not more than 20 m (65'-7") in dimension, and not more than 300 m<sup>2</sup> (3229 ft<sup>2</sup>) in area.
- c) Walls – Fire blocks are required at each floor level and other locations within a wall so that the distance between fire blocks does not exceed 3m (9'-10") vertically.
- d) Coved Ceilings/Bulkheads – Where a bulkhead is framed against a concealed wall space, the bulkhead must be separated from the wall space and ceiling space by a fire block.

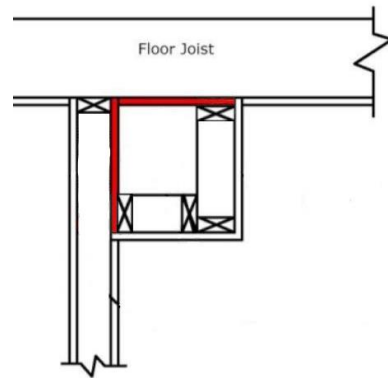


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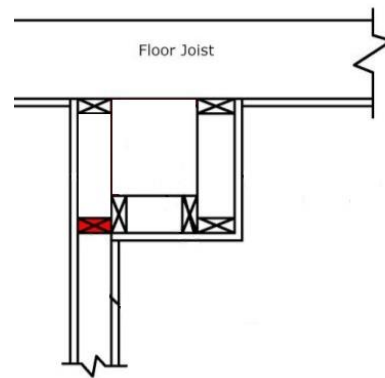
- e) Exemptions – Unless a space is completely filled with insulation or are made from material that will limit flame travel, or the width of the concealed space is less than 25 mm (1”) to limit air supply, fire blocking must be provided in strategic locations to restrict the spread of fire.
  - f) Material – Fire blocks can be constructed of materials such as:
    - i) 12.7 mm (1/2”) gypsum board,
    - ii) 12.5 mm (1/2”) plywood, OSB or waferboard,
    - iii) 0.38 (28 gauge) sheet steel,
    - iv) A double layer of 19 mm (3/4”) lumber board if the joints are staggered between layers, or
    - v) 38mm (1 1/2”) lumber, or
    - vi) Any material that will remain in place and prevent the passage of flames for not less than 15 minutes when subjected to the standard fire exposure in CAN/ULC-S101, “Fire Endurance Testes of Building Construction and Materials”.
  - g) Penetrations – Fire blocks can be pierced by piping, wiring or ducts, provided the openings around each penetration is limited so that the integrity of the remaining area of fire blocking is maintained.
  - h) Overhanging Eaves and Appendages – Fire can enter an attic through the overhanging soffit or from openings in the attic ceiling. To reduce the speed of fire travel through an attic or roof space, fire blocking is required in these locations as well.
  - i) Support of Edges – Where fire blocks are constructed of plywood, OSB, or waferboard, the joints in the material must have continuous support behind them.
  - j) Access Hatch – Where a fire block is installed within an attic space, the block is required to provide a fire barrier between the two areas. An access hatch/door to allow access from one compartment to the adjacent compartment is permitted if the access hatch/door provides a smoke-tight barrier between the compartments, has a latching or locking mechanism and a self-closing device in place to keep the hatch/door in the closed position.
- 2) **Fire Blocking Required** - Common areas overlooked during construction that require fire blocking to be provided are the following:
- a) Bulkheads - Bulkheads need to be isolated from both vertical and horizontal concealed spaces it abuts; this can be achieved by:
    - i) Prior to framing of the bulkhead, drywall the wall and ceiling of the area where the bulkhead is going to be constructed (Option A below). Or,
    - ii) Within the wall(s) and ceiling, provide fire blocks that separate the bulkhead from its adjoining vertical and horizontal concealed spaces (Option B below).



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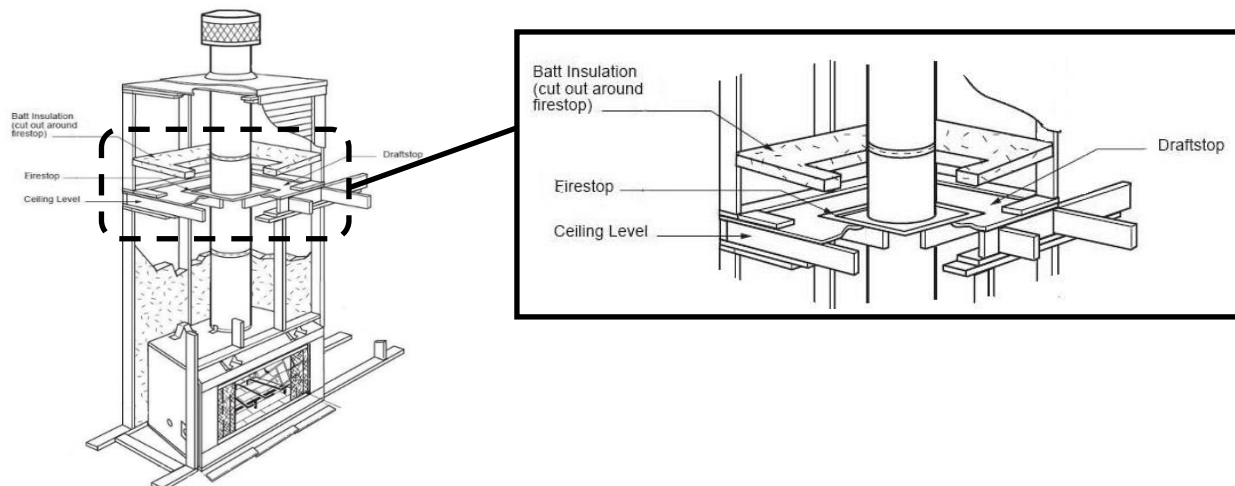


Option A



Option B

- b) Fireplace Chimneys – Fireplace chimneys create a concealed space within the enclosed chimney area, whether within the home, or constructed on the exterior. Concealed spaces within a fireplace chimney are to have fire blocking provide every 3m (9'-10'') vertically by:
- i) Provide a shield (attic / ceiling firestop & sleeve assembly) around chimney venting. If the shield does not completely cover the entire cavity along a horizontal plane so that the entire cavity prevents passage of flame and smoke vertically; Then,
  - ii) Used a listed fire block material from Article 9.10.16.3. Fire Block Materials of the current National Building Code – Alberta Edition. Fasten the material in place horizontally at the same level as the shield, extending it from the shield to the backside of any sheathing material. This will create a continuous horizontal fire block through the remaining cavity not already protected by the shield.
  - iii) Small gaps, holes or penetrations through the fire block may be sealed with an approved fire caulking material in place of one of the materials noted from Article 9.10.16.3. Fire Block Materials of the current National Building Code – Alberta Edition



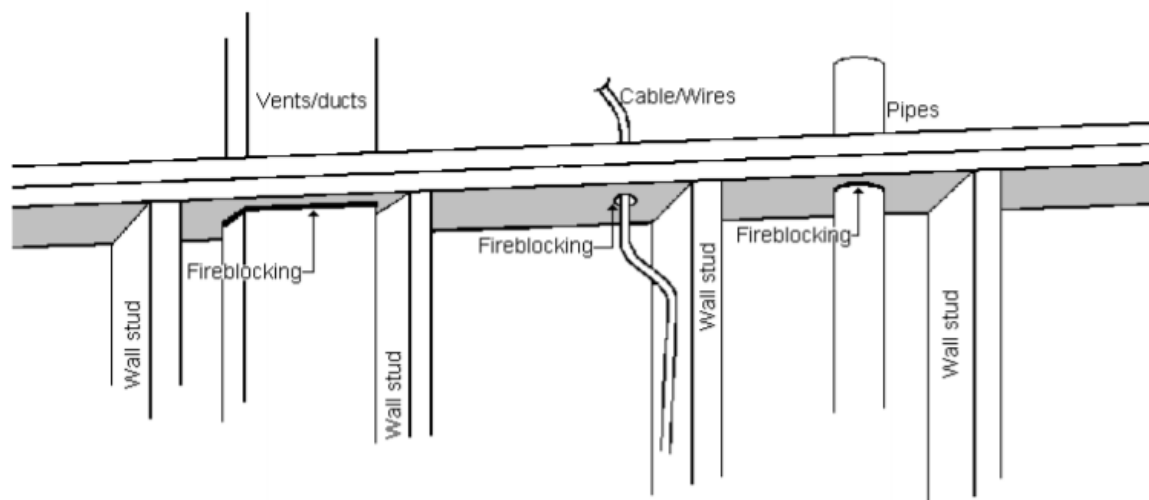


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- c) Concealed Spaces within Walls - Concealed spaces within interior walls can house mechanical, plumbing or electrical equipment, which can penetrate the top and bottom plates of these framing members for its installation. However, the top and bottom plates of the wall create the fire blocks required to separate vertical concealed spaces from horizontal concealed spaces.

Building Code permits fire blocks to be penetrated for services so long as the overall integrity of the fire block around the penetration is maintained. Maintaining the continuity of the fire block can be accomplished by;

- i) Only removing what is required of the fire block material to install required equipment,
- ii) Replace or fill any remaining voids caused by the installation, with a suitable fire block material to restore the integrity of the fire block.



Restoring integrity to fire blocking penetrated by mechanical, plumbing or electrical equipment will depend on the amount of fire blocking removed. Where only a small amount of fire blocking needs to be replaced, it can be accomplished:

- i) Filling the remaining void with batt insulation (if it will stay in place),
- ii) Semi rigid insulation,
- iii) Fire block spray foam, or
- iv) Fire caulking

Larger voids (openings / voids exceeding 1" as measured from the outside edge of penetrated equipment to intact fire block) are to restore the fire block integrity by:

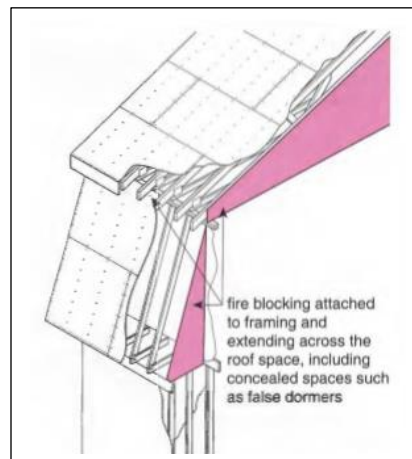
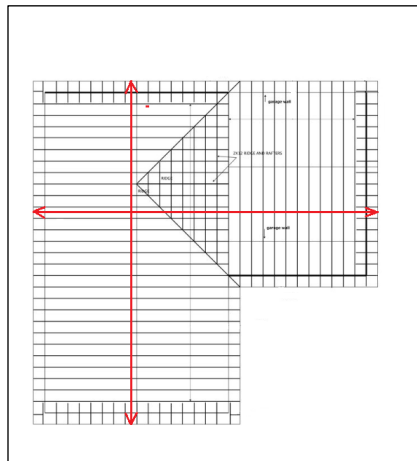
- i) Filling the remaining void with one of the listed and acceptable fire blocking material from section 9.10.16.3. (alternatively listed above), or
- ii) Filling the cavity above the penetrated fire blocking which the equipment runs through with batt insulation.



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- d) Attic Spaces – Attic spaces are a concealed space which typically contain exposed materials with a surface flame-spread rating greater than 25, such as insulation. Where the building is not sprinklered, these areas must be separated by fire blocks into compartments not more than 20 m (65'-7") in dimension, and not more than 300 m<sup>2</sup> (3229 ft<sup>2</sup>) in area. These dimensions should be measured perpendicular to the walls and is not done diagonally.

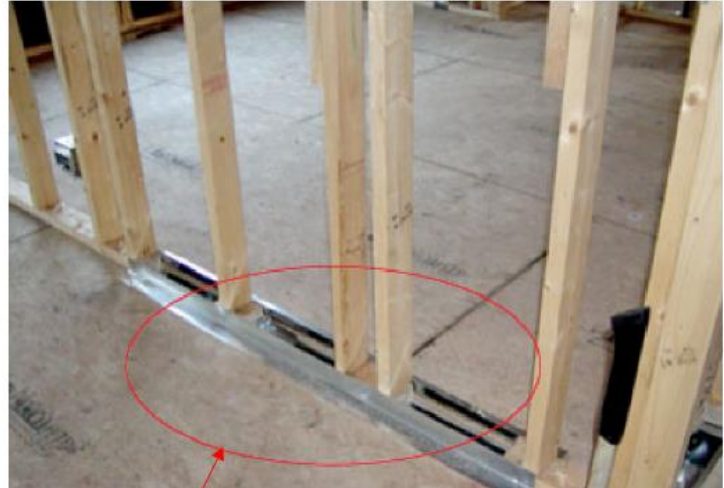
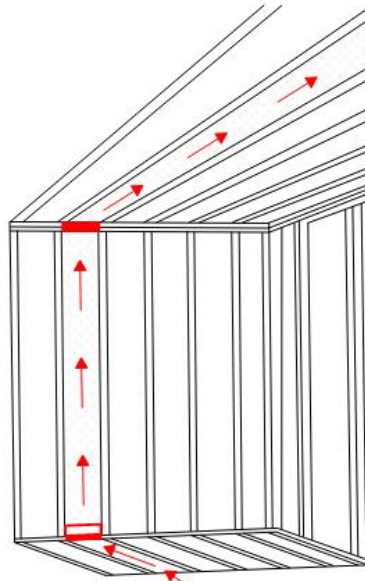
The fireblocks must also extend out through the soffit and any overhangs when installed.



- e) Engineered Floor Trusses – Where engineered floor trusses (not I-joists) are used for construction, the entire floor system becomes a concealed space open throughout. These floor systems must also provide fireblocking where the floor system exceeds 20 m (65'-7") in dimension, or is more than 300 m<sup>2</sup> (3229 ft<sup>2</sup>) in area.
- f) Undeveloped Basement - Locations where interior walls and ceiling have been fully drywalled, thus completely separating these areas from exposure to flame and smoke may not require attention. However, locations such as undeveloped basements or other undeveloped spaces where no drywall has been placed to protect the fire blocking and are exposed to allow for the flame and smoke to propagate from this area to others are to be addressed by one of the methods noted above.
- g) Fire Blocking and Return Air Ducts - Floor joist and stud cavities are often used as return air ducts in HVAC systems. Fire blocking must be installed without obstructing airflow, as improper placement can disrupt ventilation, strain equipment, reduce efficiency, and lead to appliance failure. Incorrect fire blocking can also introduce hazards. Some materials release fibers that degrade indoor air quality, while others are combustible, increasing fire risks. In a fire, certain materials may emit toxic byproducts that circulate through the ventilation system, posing serious hazards to occupants.



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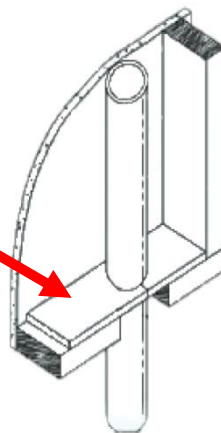


Do not install insulation or fireblocking inside the return air cavity if it will block airflow or release harmful fibers, dust, or toxic fumes.



**Photo 1 (Above):**

*An Exposed location within undeveloped space in a dwelling where mechanical equipment has penetrated a required fire block.*



**Photo 2 (Left)**

*One method of restoring the Integrity of fire blocking is to use one of the listed materials from Article 9.10.16.3. of the National Building Code – Alberta Edition and form it to fit around the penetrating item and over the compromised fire blocking.*



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**Photo 3 (Right) Photo 4 (Below)**

*The use of Fire caulking or Fire Block spray foam (discuss with the safety codes officer before use) may be used to restore the integrity of fire blocking where the annular gap between the penetrating equipment and fire blocking is not more than 3/4 of an inch gap.*



### Reference

Approval Date

- February 2025

Last Review Date

- February 2025