Bulletin: Secondary Suites New & Existing Construction FRR & Sound

Purpose – For New Buildings or New Additions

To get a 45 minute FRR with a 43 STC sound rating, 30 or 15 minute fire resistance rating (FRR) with sound ratings 830_Division B - Fire and Sound Resistance Tables (bcpublications.ca) you can use the following from the BC Building Code (BCBC) along with the appropriate Smoke Alarm system and interconnection stated in 9.10.19.5. of the BCBC:

Note that other wall and floor/ceiling methods are noted in the Tables and Code to get the ratings you require for the type of construction.

Ceilings/Floors: Using F6h: 45-minute FRR and 43 STC

- 5/8" subfloor on wood joists or wood I-joists spaced not more than 600mm (24") with
- minimum 6" of rock wool in joist spaces with
- steel furring channels spaced 16" or 24" on center with
- 2 layers of 1/2" Type X gypsum board taped and filled

Interior Wall: Using W3c: 45-minute FRR and 43 STC for loadbearing and non-loadbearing walls

- 38mm x 89mm (2x4) studs spaced 400 or 600 mm (16-24") o/c with
- minimum 89 mm (3.5") thick absorptive material (6) (Rock wool) with
- resilient metal channels on one side spaced 400 or 600 mm (16-24") o/c
- with one layer of 12.7 mm (1/2") gypsum applied to both sides, taped and filled

Ceilings/Floors: Using 9.10.3.1.(3) 30-minute FRR

- wood floor joist assemblies with
- minimum 6" of rock wool in joist spaces with
- resilient metal channels spaced 16" or 24" on center with
- 1 layer of 1/2" Type X gypsum board taped and filled

Interior Wall: Using 9.10.3.1.(3) 30-minute FRR

- walls framed with wood studs
- joist spaces filled with
  - i) preformed insulation of rock or slag fibres conforming to CAN/ULC-S702, "Mineral Fibre Thermal Insulation for Buildings," having a mass per unit area of not less than 1.22 kg/m^2 of floor surface, (eg: rock wool) or
  - ii) wet-blown cellulose fibres conforming to CAN/ULC-S703, "Cellulose Fibre Insulation for Buildings," having a density of not less than 50 kg/m^3 to a minimum depth of 90 mm on the underside of the subfloor and the sides of the structural members
- resilient metal channel on one side of the fire separation spaced 400 or 600 mm (16-24") o/c
- with 1 layer of 12.7 mm (1/2") gypsum applied to both sides, taped and filled

Ceilings/Floors: Using 9.11.1.1.(2) 15-minute FRR

- joists spaces filled with
- minimum 150 mm (6") of sound absorbing material (eg: Rock wool) in joist spaces with
- resilient channel spaced 16" or 24" on center with
- 1 layer of 1/2" gypsum board taped and filled

Interior Wall: Using 9.11.1.1.(2) 15-minute FRR

- stud spaces 400 or 600 mm (16-24") o/c with
- stud spaces filled with sound absorbing material (eg: Rock wool) with
- resilient metal channel on one side spaced 400 or 600 mm (16-24") o/c
- with a minimum of 12.7 mm (1/2") gypsum applied to both sides of walls, taped and filled

NOTE: Fire separations must be continuous including around all ducts in joist spaces, such as heat ducting, bathroom, kitchen and dryer fans entering the suite penetrating through the fire separation.

Smoke Alarms – see notes based on FRR requirements

- **9.10.19.5. Interconnection of Smoke Alarms**
- 1) Where more than one smoke alarm is required in a dwelling unit, the smoke alarms shall be interconnected so that the actuation of one alarm will cause all alarms within the dwelling unit to sound.
- 2) Except as provided in Sentence (3), in a house with a secondary suite including their common spaces
- a) all smoke alarms shall be of photo-electric type and interconnected so that the actuation of any one smoke alarm causes all smoke alarms within the house with a secondary suite including their common spaces to sound when the fire separations described in Articles 9.9.4.2., 9.10.9.14. and 9.10.9.15. have a fire-resistance rating **not less than 15 min (**see also Sentence 9.10.3.1.(2)), or
- b) an additional smoke alarm of photo-electric type shall be installed in each dwelling unit and common space and be interconnected so that the actuation of one smoke alarm will cause the additional smoke alarms in the other dwelling unit, dwelling units or common spaces to sound when the fire separations described in Articles 9.9.4.2., 9.10.9.14. and 9.10.9.15. have a fire-resistance rating **not less than 30 min** (see also Sentence 9.10.3.1.(3)).
- **3) Additional smoke alarms and interconnection of smoke alarms between dwelling units and common spaces in a house with a secondary suite is not required if**
- a) the fire separations described in Articles 9.10.9.14. and 9.10.9.15. have a fire-resistance rating **not less than 45 min**, or
- b) the building is sprinklered.

Purpose: For Existing Buildings only – Alternate Compliance Method

Division A Sentence 1.1.1.1.(6) For the design and construction of alterations to existing buildings to add a secondary suite, not including the design and construction of new additions or new buildings**, the Alternate Compliance Methods for Alterations to Existing Buildings to Add a Secondary Suite in Table 1.1.1.1.(6) may be substituted for requirements contained elsewhere in this Code.** (See Note A-1.1.1.1.(6).)

For Existing Buildings only – Alternate Compliance Method

Table 1.1.1.1.(6) may be substituted for requirements contained elsewhere in this Code. 120_Division A - Section 1.1. General (Rev4) (bcpublications.ca) Alternate Compliance for Secondary Suites. See the full Table for all Alternate Compliance code references to Division B.

In lieu of the requirements for Sentence 9.10.3.1.(3) where a minimum 30-minute fire resistance and fire protection rating is permitted the alternative method may be used; and in **lieu of 9.10.8.3.(1)** Fire-resistance ratings for Walls, Columns and Arches the alternative method may be used.

Ceilings/Floors: Using Alternate Compliance in lieu of 9.10.3.1.(3) 30-minute FRR

- Using existing wood floor joist assemblies and
- ADDING resilient metal channels spaced 400 or 600 mm o.c. (16" or 24") on center and
- ADDING an additional layer of not less than 12.7 mm (1/2”) gypsum to an existing finished floor-ceiling assembly that has not less than 12.7 mm (1/2”) gypsum on the ceiling side is permitted to be used where a 30 min fire-resistance rating is required.

Walls: Using Alternate Compliance in lieu of 9.10.3.1.(3) 30-minute FRR

- Using existing wood frame construction and
- ADDING resilient metal channels spaced 400 or 600 mm o.c. (16" or 24") on center and
- ADDING an additional layer of not less than 12.7 mm (1/2”) gypsum board to one side of an existing finished wall assembly that has not less than 12.7 mm gypsum board on each side

Loadbearing Walls, Columns and Arches: Using Alternate Compliance in lieu of 9.10.8.3.(1)

Division B, Sentence 9.10.8.3.(1) Loadbearing walls, columns and arches in the storey immediately below a floor or roof assembly shall have a fire-resistance rating of not less than that required for the supported floor or roof assembly.

Alternate Compliance Method:

- Except for heavy timber elements and those of masonry or concrete construction, **light frame walls, columns, arches, and beams as well as loadbearing steel elements** that support floors between dwelling units in a house with a secondary suite including their common spaces shall be protected by not less than 12.7 mm thick gypsum board.

Sound Transmission: Using Alternate Compliance in lieu of 9.11.1.1.(2)

Sound Transmission Sentence 9.11.1.1.(2) Each dwelling unit shall be separated from every other space in a house with a secondary suite in which noise may be transmitted by construction having joist and stud spaces filled with sound-absorbing material, resilient channel on one side of the separation, and 12.7 mm thick gypsum board on ceilings and on both sides of walls, or by either construction providing an STC rating of not less than 43, or by using a separating assembly and adjoining construction providing an ASTC rating of not less than 40.

Alternate Compliance Method: (Sound absorbing material not required)

- The assemblies and adjoining constructions that separate the dwelling units in a house with a secondary suite including their common spaces need not comply with Clause 9.11.1.1.(2)(a) where resilient metal channel spaced 400 or 600 mm o.c. AND an additional layer of not less than 12.7 mm gypsum board is **added to one side** of an existing finished assembly.

References: BC Building Code 2018

- 830_Division B - Fire and Sound Resistance Tables (bcpublications.ca) **Fire and Sound Resistance Tables (For walls and floors/ceilings)**
- 650_Division B - Section 9.10. Fire Protection (Rev2) (bcpublications.ca)
  - **9.10.3.1. Fire-resistance and Fire-Protection Ratings**
  - **9.10.8.3.(1) Fire-resistance Ratings for Walls, Columns and Arches**
  - **9.10.19.5. Smoke Alarms**
- 825_Division B - Notes to Part 9 (Rev2) (bcpublications.ca) **Appendix Notes**
- 120_Division A - Section 1.1. General (Rev4) (bcpublications.ca) **Alternate Compliance for Secondary Suites in Existing Buildings - Division A Sentence 1.1.1.1.(6)**

Please note: *Building Bulletins are prepared to provide convenient information for clients and should not be considered a replacement for reviewing the bylaw or associated legal documents. If there is any contradiction between this guide and relevant municipal bylaws and/or applicable codes, please refer to the bylaws and/or current codes for legal authority.*

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