Section 3.1. General

3.1.1. Scope and Definitions

3.1.1.1. Scope

1) The scope of this Part shall be as described in Subsection 1.3.3. of Division A.

3.1.1.2. Defined Words

1) Words that appear in italics are defined in Article 1.4.1.2. of Division A.

3.1.1.3. Use of Term Storage Tank

1) For the purposes of this Part, the term “storage tank” shall mean a vessel for flammable liquids or combustible liquids having a capacity of more than 230 L and designed to be installed in a fixed location.

3.1.1.4. Fire Protection Information

1) Information to be submitted regarding major components of fire protection shall conform to the requirements of Subsection 2.2.3. of Division C.

3.1.2. Classification of Buildings or Parts of Buildings by Major Occupancy

3.1.2.1. Classification of Buildings

1) Except as permitted by Articles 3.1.2.3. to 3.1.2.6., every building or part thereof shall be classified according to its major occupancy as belonging to one of the Groups or Divisions described in Table 3.1.2.1. (See Note A-3.1.2.1.)

2) A building intended for use by more than one major occupancy shall be classified according to all major occupancies for which it is used or intended to be used.

<table>
<thead>
<tr>
<th>Group</th>
<th>Division</th>
<th>Description of Major Occupancies</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>Assembly occupancies intended for the production and viewing of the performing arts</td>
</tr>
<tr>
<td>A</td>
<td>2</td>
<td>Assembly occupancies not elsewhere classified in Group A</td>
</tr>
<tr>
<td>A</td>
<td>3</td>
<td>Assembly occupancies of the arena type</td>
</tr>
<tr>
<td>A</td>
<td>4</td>
<td>Assembly occupancies in which occupants are gathered in the open air</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>Detention occupancies</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>Treatment occupancies</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>Care occupancies</td>
</tr>
<tr>
<td>C</td>
<td>–</td>
<td>Residential occupancies</td>
</tr>
<tr>
<td>D</td>
<td>–</td>
<td>Business and personal services occupancies</td>
</tr>
<tr>
<td>E</td>
<td>–</td>
<td>Mercantile occupancies</td>
</tr>
<tr>
<td>F</td>
<td>1</td>
<td>High-hazard industrial occupancies</td>
</tr>
<tr>
<td>F</td>
<td>2</td>
<td>Medium-hazard industrial occupancies</td>
</tr>
<tr>
<td>F</td>
<td>3</td>
<td>Low-hazard industrial occupancies</td>
</tr>
</tbody>
</table>
3.1.2.2. **Occupancies of Same Classification**

1) Any building is deemed to be occupied by a single major occupancy, notwithstanding its use for more than one major occupancy, provided that all occupancies are classified as belonging to the same Group classification or, where the Group is divided into Divisions, as belonging to the same Division classification described in Table 3.1.2.1.

3.1.2.3. **Arena-Type Buildings**

1) An arena-type building intended for occasional use for trade shows and similar exhibition purposes shall be classified as a Group A, Division 3 occupancy. (See Note A-3.1.2.3.(1).)

3.1.2.4. **Police Stations**

1) A police station with detention quarters is permitted to be classified as a Group B, Division 2 major occupancy provided the station is not more than 1 storey in building height and 600 m² in building area.

3.1.2.5. **Convalescent, Children's Custodial, and Residential Care Homes**

1) Convalescent homes and children’s custodial homes are permitted to be classified as residential occupancies within the application of Part 3, provided that occupants are ambulatory and live as a single housekeeping unit in a suite with sleeping accommodation for not more than 10 persons.

2) A care facility accepted for residential use pursuant to provincial legislation is permitted to be classified as a residential occupancy, provided
   a) occupants live as a single housekeeping unit in a dwelling unit with sleeping accommodation for not more than 10 persons,
   b) smoke alarms are installed in conformance with Article 3.2.4.20.,
   c) emergency lighting is provided in conformance with Subsection 3.2.7., and
   d) the building is sprinklered throughout.

3.1.2.6. **Group A, Division 2, Low Occupant Load**

1) A suite of Group A, Division 2 assembly occupancy, except a child or infant daycare facility, is permitted to be classified as a Group D, business and personal services occupancy provided
   a) the number of persons in the suite does not exceed 30, and
   b) except as permitted by Sentence (2), the suite is separated from the remainder of the building by a fire separation having a fire-resistance rating of not less than 1 hr.

2) The fire separation required by Sentence (1) need not have a fire-resistance rating where the suite is located in a building that is sprinklered throughout.

3) A permanent sign, with lettering not less than 50 mm high with a 12 mm stroke, indicating the lesser of the occupant load for the suite or 30 persons, shall be posted in a conspicuous location near the suite’s principal entrance.

3.1.2.7. **Storage of Combustible Fibres**

1) Buildings or parts thereof used for the storage of baled combustible fibres shall be classified as medium-hazard industrial occupancies.

3.1.2.8. **Daycare Facilities for Children**

(See Note A-3.1.2.8.)

1) A daycare facility for children shall be classified as a Group A, Division 2 assembly occupancy. (See also Article 3.3.2.17.)
3.1.3. Multiple Occupancy Requirements

3.1.3.1. Separation of Major Occupancies

1) Except as permitted by Sentences (2) and (3), major occupancies shall be separated from adjoining major occupancies by fire separations having fire-resistance ratings conforming to Table 3.1.3.1.

2) In a building not more than 3 storeys in building height, if not more than 2 dwelling units are contained together with a Group E major occupancy, the fire-resistance rating of the fire separation between the 2 major occupancies need not be more than 1 h.

3) In a building conforming to the requirements of Articles 3.2.8.2. to 3.2.8.8., the requirements of Sentence (1) for fire separations between major occupancies do not apply at the vertical plane around the perimeter of an opening through the horizontal fire separation.

Table 3.1.3.1.
Major Occupancy Fire Separations(1)
Forming Part of Sentence 3.1.3.1.(1)

<table>
<thead>
<tr>
<th>Major Occupancy</th>
<th>Minimum Fire-Resistance Rating of Fire Separation, h</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-1</td>
<td>A-2 A-3 A-4 B-1 B-2 B-3 C D E F-1 F-2 F-3</td>
</tr>
<tr>
<td>A-2</td>
<td>1 1 1 2 2 2 1 1 2 (2) 2 1</td>
</tr>
<tr>
<td>A-3</td>
<td>1 1 1 2 2 2 1 1 2 (2) 2 1</td>
</tr>
<tr>
<td>A-4</td>
<td>1 1 2 2 2 1 1 2 (2) 2 1</td>
</tr>
<tr>
<td>B-1</td>
<td>2 2 2 2 2 1 1 2 2 (2) 2 2</td>
</tr>
<tr>
<td>B-2</td>
<td>2 2 2 2 2 1 2 2 2 (2) 2 2</td>
</tr>
<tr>
<td>B-3</td>
<td>2 2 2 2 2 1 1 2 2 (2) 2 2</td>
</tr>
<tr>
<td>C</td>
<td>1 1 1 2 2 2 1 1 2 (2) 2 1</td>
</tr>
<tr>
<td>D</td>
<td>1 1 1 2 2 2 1 1 2 (2) 2 1</td>
</tr>
<tr>
<td>E</td>
<td>2 2 2 2 2 2 2 2 2 2 (2) 2 2</td>
</tr>
<tr>
<td>F-1</td>
<td>2 2 2 2 2 2 2 2 2 2 2 2</td>
</tr>
<tr>
<td>F-2</td>
<td>1 1 1 2 2 2 1 1 2 (2) 2 1</td>
</tr>
<tr>
<td>F-3</td>
<td>1 1 1 2 2 2 1 1 2 (2) 2 1</td>
</tr>
</tbody>
</table>

Notes to Table 3.1.3.1.:
(1) Section 3.3 contains requirements for the separation of occupancies and tenancies that are in addition to the requirements for the separation of major occupancies.
(2) See Sentence 3.1.3.2.(1).
(3) Where the building is constructed in accordance with Article 3.2.2.50., a fire separation with a 2 h fire-resistance rating is required between the Group C and Group A, Division 2 major occupancies.
(4) Where the building is constructed in accordance with Article 3.2.2.58., a fire separation with a 2 h fire-resistance rating is required between the Group D and Group A, Division 2 major occupancies.
(5) See Sentence 3.1.3.1.(2).
(6) See Sentence 3.1.3.2.(2).

3.1.3.2. Prohibition of Occupancy Combinations

1) No major occupancy of Group F, Division 1 shall be contained within a building with any occupancy classified as Group A, B or C.

2) Not more than one suite of residential occupancy shall be contained within a building classified as a Group F, Division 2 major occupancy.

3) Reserved.

4) Reserved.
5) **Reserved.**

### 3.1.4. Combustible Construction

#### 3.1.4.1. Combustible Materials Permitted

1) A building permitted to be of combustible construction is permitted to be constructed of combustible materials, with or without noncombustible components. (See Note A-3.1.4.1.(1).

2) The flame-spread rating on any exposed surface of foamed plastic insulation, and on any surface that would be exposed by cutting through the insulation in any direction, shall be not more than 500.

#### 3.1.4.2. Protection of Foamed Plastics

(See Note A-3.1.4.2.)

1) Except as permitted in Sentence (2), foamed plastics that form part of a wall or ceiling assembly in combustible construction shall be protected from adjacent spaces in the building, other than adjacent concealed spaces within attic or roof spaces, crawl spaces, and wall and ceiling assemblies,

   a) by one of the interior finishes described in Subsections 9.29.4. to 9.29.9.,

   b) provided the building does not contain a Group A, Group B or Group C major occupancy, by sheet metal

      i) mechanically fastened to the supporting assembly independent of the insulation,

      ii) not less than 0.38 mm thick, and

      iii) with a melting point not below 650°C, or

   c) by any thermal barrier that meets the requirements of Sentence 3.1.5.15.(2) (see Note A-3.1.4.2.(1)(c)).

   (See Note A-3.1.4.2.(1).)

   (See also Sentence 3.6.4.3.(1).)

2) A walk-in cooler or freezer consisting of factory-assembled wall, floor or ceiling panels containing foamed plastics is permitted in a building permitted to be of combustible construction, provided the panels

   a) are protected on both sides by sheet metal not less than 0.38 mm thick having a melting point not less than 650°C,

   b) do not contain an air space, and

   c) when a sample panel with an assembled joint typical of field installation is subjected to the applicable test described in Subsection 3.1.12., have a flame-spread rating not more than that permitted for the space in which they are located or the space that they bound, as applicable.

   (See Note A-3.1.4.2.(2) and 3.1.5.7.(3).)

3) The flame-spread rating of doors containing foamed plastics shall comply with Sentences 3.1.13.2.(1) to (3).

#### 3.1.4.3. Wires and Cables

1) Except as required by Sentence (2), optical fibre cables and electrical wires and cables with combustible insulation, jackets or sheathes that are installed in a building permitted to be of combustible construction shall

   a) not convey flame or continue to burn for more than 1 min when tested in conformance with the Vertical Flame Test (FT1 rating) in CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables,” or

   b) be located in

      i) totally enclosed noncombustible raceways (see Note A-3.1.4.3.(1)(b)(i)),

      ii) masonry walls,

      iii) concrete slabs, or

      iv) totally enclosed non-metallic raceways conforming to Clause 3.1.5.23.(1)(b).

   (See Note A-3.1.4.3.(1).)

   (See also Sentence 3.6.4.3.(1).)
2) Except as permitted in Sentences (3) and (4), optical fibre cables and electrical wires and cables with combustible insulation, jackets or sheathes that are used for the transmission of voice, sound or data and are installed in a plenum in a building permitted to be of combustible construction shall exhibit the following characteristics when tested in conformance with CAN/ULC-S102.4, “Standard Method of Test for Fire and Smoke Characteristics of Electrical Wiring, Cables and Non-Metallic Raceways,” (FT6 rating):
   a) a horizontal flame distance of not more than 1.5 m,
   b) an average optical smoke density of not more than 0.15, and
   c) a peak optical smoke density of not more than 0.5.

3) Except as permitted in Sentence (4), where totally enclosed noncombustible raceways are used in a plenum, exposed components of wiring systems with combustible insulation, jackets or sheathes, including optical fibre cables and electrical wires and cables that are used for the transmission of voice, sound or data, that are installed in the plenum or that extend not more than 9 m from the plenum, including drop down to the floor level, are permitted, provided they exhibit a vertical char of not more than 1.5 m when tested in conformance with the Vertical Flame Test – Cables in Cable Trays (FT4 rating) in CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables.”

4) Cables or wires within plenums that are used for the transmission of signals in fire alarm systems need not comply with the requirements of Sentence (2).

3.1.4.4. Non-metallic Raceways

1) Totally enclosed non-metallic raceways used in a plenum in a building permitted to be of combustible construction shall meet the requirements of Clause 3.1.5.23.(1)(a).

3.1.4.5. Fire-Retardant-Treated Wood

1) If fire-retardant-treated wood is specified in this Part, the wood shall
   a) be pressure impregnated with fire-retardant chemicals in conformance with CAN/CSA-O80 Series, “Wood Preservation,” and
   b) have a flame-spread rating not more than 25.

3.1.4.6. Heavy Timber Construction Alternative

1) If combustible construction is permitted and is not required to have a fire-resistance rating more than 45 min, heavy timber construction is permitted to be used.

2) If heavy timber construction is permitted, it shall conform to Article 3.1.4.7.

3.1.4.7. Heavy Timber Construction

1) Wood elements in heavy timber construction shall be arranged in heavy solid masses and with essentially smooth flat surfaces to avoid thin sections and sharp projections.

2) Except as permitted by Sentences (3) to (6) and (12), the minimum dimensions of wood elements in heavy timber construction shall conform to Table 3.1.4.7.

<table>
<thead>
<tr>
<th>Supported Assembly</th>
<th>Structural Element</th>
<th>Solid Sawn (width x depth), mm x mm</th>
<th>Glued-Laminated (width x depth), mm x mm</th>
<th>Round (diam), mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roofs only</td>
<td>Columns</td>
<td>140 x 191</td>
<td>130 x 190</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Arches supported on the tops of walls or abutments</td>
<td>89 x 140</td>
<td>80 x 152</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Beams, girders and trusses</td>
<td>89 x 140</td>
<td>80 x 152</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Arches supported at or near the floor line</td>
<td>140 x 140</td>
<td>130 x 152</td>
<td>–</td>
</tr>
</tbody>
</table>

Effective December 10, 2018 to December 11, 2019
3) Where splice plates are used at splices of roof arches supported on the tops of walls or abutments, roof trusses, roof beams and roof girders in heavy timber construction, they shall be not less than 64 mm thick.

4) Floors in heavy timber construction shall be of glued-laminated or solid sawn plank not less than
   a) 64 mm thick, splined or tongued and grooved, or
   b) 38 mm wide and 89 mm deep set on edge and well spiked together.

5) Floors in heavy timber construction shall be laid
   a) so that no continuous line of end joints will occur except at points of support, and covered with
      i) tongued and grooved flooring not less than 19 mm thick laid crosswise or diagonally, or
      ii) tongued and grooved phenolic-bonded plywood, strandboard or waferboard not less than 12.5 mm thick, and
   b) not closer than 15 mm to the walls to provide for expansion, with the gap covered at the top or bottom.

6) Roofs in heavy timber construction shall be of tongued and grooved phenolic-bonded plywood, strandboard or waferboard not less than 28 mm thick, or glued-laminated or solid sawn plank that is
   a) not less than 38 mm thick, splined or tongued and grooved, or
   b) not less than 38 mm wide and 64 mm deep set on edge and laid so that no continuous line of end joints will occur except at the points of support.

7) Wood columns in heavy timber construction shall be continuous or superimposed throughout all storeys.

8) Superimposed wood columns in heavy timber construction shall be connected by
   a) reinforced concrete or metal caps with brackets,
   b) steel or iron caps with pintles and base plates, or
   c) timber splice plates fastened to the columns by metal connectors housed within the contact faces.

9) Where beams and girders in heavy timber construction enter masonry, wall plates, boxes of the self-releasing type or hangers shall be used.

10) Wood girders and beams in heavy timber construction shall be closely fitted to columns, and adjoining ends shall be connected by ties or caps to transfer horizontal loads across the joints.

11) In heavy timber construction, intermediate wood beams used to support a floor shall be supported on top of the girders or on metal hangers into which the ends of the beams are closely fitted.

12) Roof arches supported on the top of walls or abutments, roof trusses, roof beams and roof girders in heavy timber construction are permitted to be not less than 64 mm wide provided
   a) where two or more spaced members are used, the intervening spaces are
      i) blocked solidly throughout, or
      ii) tightly closed by a continuous wood cover plate not less than 38 mm thick secured to the underside of the members, or
   b) the underneath of the roof deck or sheathing is sprinklered.

---

**Table 3.1.4.7. (continued)**

<table>
<thead>
<tr>
<th>Supported Assembly</th>
<th>Structural Element</th>
<th>Solid Sawn (width × depth), mm × mm</th>
<th>Glued-Laminated (width × depth), mm × mm</th>
<th>Round (diam), mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floors, floors plus roofs</td>
<td>Columns</td>
<td>191 × 191</td>
<td>175 × 190</td>
<td>200</td>
</tr>
<tr>
<td>Beams, girders, trusses and arches</td>
<td>140 × 241 or 130 × 228</td>
<td>191 × 191</td>
<td>175 × 190</td>
<td>–</td>
</tr>
</tbody>
</table>

**Effective December 10, 2018 to December 11, 2019**
3.1.4.8. Exterior Cladding

1) The exterior cladding on each exterior wall of buildings conforming to Article 3.2.2.50. or 3.2.2.58. shall consist of:
   a) noncombustible cladding, or
   b) a wall assembly that satisfies the criteria of Clause 3.1.5.5.(1)(b).

(See Note A-3.1.4.8.(1).) (See also Notes A-3.1.5.5.(1)(b)(i) and A-3.1.5.5.(1)(b)(ii).)

2) A wall assembly conforming to Clause (1)(b) that includes combustible cladding made of fire-retardant-treated wood shall be tested for fire exposure after the cladding has been subjected to the accelerated weathering test specified in ASTM D 2898, “Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.”

3) The solution described in Clause (1)(b) is not permitted where an exposing building face is required by Article 3.2.3.7. to have noncombustible cladding.

3.1.5. Noncombustible Construction

3.1.5.1. Noncombustible Materials

(See Note A-3.1.4.1.(1).)

1) Except as permitted by Sentences (2) to (4) and Articles 3.1.5.2. to 3.1.5.24., 3.1.13.4. and 3.2.2.16., a building or part of a building required to be of noncombustible construction shall be constructed with noncombustible materials. (See also Subsection 3.1.13. for the requirements regarding the flame-spread rating of interior finishes.)

2) Notwithstanding the definition of noncombustible materials stated in Article 1.4.1.2. of Division A, a material is permitted to be used in noncombustible construction provided that, when tested in accordance with ULC-S135, “Test Method for the Determination of Combustibility Parameters of Building Materials Using an Oxygen Consumption Calorimeter (Cone Calorimeter),” at a heat flux of 50 kW/m²,
   a) its average total heat release is not more than 3 MJ/m²,
   b) its average total smoke extinction area is not more than 1.0 m², and
   c) the test duration is extended beyond the time stipulated in the referenced standard until it is clear that there is no further release of heat or smoke.

3) If a material referred to in Sentence (2) consists of a number of discrete layers and testing reveals that the surface layer or layers protect the underlying layers such that complete combustion of the underlying layers does not occur, the test shall be repeated by removing the outer layers sequentially until all layers have been exposed during testing, or until complete combustion has occurred.

4) The acceptance criteria for a material tested in accordance with Sentence (3) shall be based on the cumulative emissions from all layers, which must not exceed the criteria stated in Clauses (2)(a) and (b).

3.1.5.2. Minor Combustible Components

1) The following minor combustible components are permitted in a building required to be of noncombustible construction:
   a) paint (see also Clause 3.1.13.1.(2)(b)),
   b) self-adhesive tapes, mastics and caulking materials, including foamed plastic air sealants, applied to provide a seal between the major components of exterior wall construction, (see also Article 3.6.4.3. for limits on the use of combustible materials in plenum spaces),
   c) fire stops and fire blocks conforming to Sentence 3.1.9.1.(1) and Article 3.1.11.7.,
   d) tubing for pneumatic controls provided it has an outside diameter of not more than 10 mm,
   e) adhesives, vapour barriers and sheathing papers,
   f) electrical outlet and junction boxes,
   g) wood blocking within wall assemblies intended for the attachment of handrails, fixtures, and similar items mounted on the surface of the wall, and
   h) similar minor components.
3.1.5.3. **Combustible Roofing Materials**

1) *Combustible roof* covering that has an A, B, or C classification determined in conformance with Subsection 3.1.15. is permitted on a building required to be of noncombustible construction.

2) *Combustible roof sheathing* and roof sheathing supports installed above a concrete deck are permitted on a building required to be of noncombustible construction provided
   a) the concrete deck is not less than 50 mm thick,
   b) the height of the roof space above the deck is not more than 1 m,
   c) the roof space is divided into compartments by fire blocks in conformance with Article 3.1.11.5.,
   d) openings through the concrete deck other than for noncombustible roof drains and plumbing piping are protected by masonry or concrete shafts
      i) constructed as fire separations having a fire-resistance rating not less than 1 h, and
      ii) extending from the concrete deck to not less than 150 mm above the adjacent roof sheathing,
   e) the perimeter of the roof is protected by a noncombustible parapet extending from the concrete deck to not less than 150 mm above the adjacent sheathing, and
   f) except as permitted by Clause (d), the roof space does not contain any building services.

3) *Combustible cant strips, roof curbs, nailing strips* and similar components used in the installation of roofing are permitted on a building required to be of noncombustible construction.

4) *Wood nailer facings to parapets*, not more than 600 mm high, are permitted on a building required to be of noncombustible construction, if the facings and any roof membranes covering the facings are protected by sheet metal.

3.1.5.4. **Combustible Glazing and Skylights**

1) *Combustible skylight assemblies* are permitted in a building required to be of noncombustible construction if the assemblies have a flame-spread rating not more than
   a) 150 provided the assemblies
      i) have an individual area not more than 9 m²,
      ii) have an aggregate horizontal projected area of the openings through the ceiling not more than 25% of the area of the ceiling of the room or space in which they are located, and
      iii) are spaced not less than 2.5 m from adjacent assemblies and from required fire separations, or
   b) 75 provided the assemblies
      i) have an individual area not more than 27 m²,
      ii) have an aggregate horizontal projected area of the openings through the ceiling not more than 33% of the area of the ceiling of the room or space in which they are located, and
      iii) are spaced not less than 1.2 m from adjacent assemblies and from required fire separations.

   (See Note A-3.1.5.4.(1.).)

2) *Combustible vertical glazing* installed no higher than the second storey is permitted in a building required to be of noncombustible construction.

3) Except as permitted by Sentence (4), the combustible vertical glazing permitted by Sentence (2) shall have a flame-spread rating not more than 75.

4) The flame-spread rating of combustible glazing is permitted to be not more than 150 if the aggregate area of glazing is not more than 25% of the wall area of the storey in which it is located, and
   a) the glazing is installed in a building not more than 1 storey in building height,
   b) the glazing in the first storey is separated from the glazing in the second storey in accordance with the requirements of Article 3.2.3.17. for opening protection, or
   c) the building is sprinklered throughout.

5) *Combustible window sashes and frames* are permitted in a building required to be of noncombustible construction provided
a) each window in an exterior wall face is an individual unit separated by noncombustible wall construction from every other opening in the wall,

b) windows in exterior walls in contiguous storeys are separated by not less than 1 m of noncombustible construction, and
c) the aggregate area of openings in an exterior wall face of a fire compartment is not more than 40% of the area of the wall face.

3.1.5.5. Combustible Cladding on Exterior Walls

(See Note A-3.1.5.5.)

1) Except as provided in Sentences (2) and (3), combustible cladding is permitted to be used on an exterior wall assembly in a building required to be of noncombustible construction, provided

a) the building is
   i) not more than 3 storeys in building height, or
   ii) sprinklered throughout, and

b) when tested in accordance with CAN/ULC-S134, “Fire Test of Exterior Wall Assemblies,” the wall assembly satisfies the following criteria for testing and conditions of acceptance (see Note A-3.1.5.5.(1)(b)):
   i) flaming on or in the wall assembly does not spread more than 5 m above the opening (see Note A-3.1.5.5.(1)(b)(i)), and
   ii) the heat flux during the flame exposure on the wall assembly is not more than 35 kW/m² measured at 3.5 m above the opening (see Note A-3.1.5.5.(1)(b)(ii)).

2) Except as permitted by Articles 3.2.3.10. and 3.2.3.11., where the limiting distance in Tables 3.2.3.1.-B to 3.2.3.1.-E permits an area of unprotected openings of not more than 10% of the exposing building face, the construction requirements of Table 3.2.3.7. shall be met.

3) A wall assembly permitted by Sentence (1) that includes combustible cladding of fire-retardant-treated wood shall be tested for fire exposure after the cladding has been subjected to an accelerated weathering test as specified in ASTM D 2898, “Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing.”

3.1.5.6. Combustible Components in Exterior Walls

(See Note A-3.1.5.6.)

1) Combustible components, other than those permitted by Article 3.1.5.5., are permitted to be used in an exterior wall assembly of a building required to be of noncombustible construction, provided

a) the building is
   i) not more than 3 storeys in building height, or
   ii) sprinklered throughout, and

b) the wall assembly
   i) meets the requirements of Clause 3.1.5.5.(1)(b), or
   ii) is protected by masonry or concrete cladding not less than 25 mm thick (see Note A-3.1.5.5.(1)(b)).

3.1.5.7. Factory-Assembled Panels

1) Except as provided in Sentence (2), factory-assembled wall and ceiling panels containing foamed plastic insulation with a flame-spread rating not more than 500 are permitted to be used in a building required to be of noncombustible construction, provided

a) the building
   i) is sprinklered,
   ii) is not more than 18 m high, measured from grade to the underside of the roof, and
   iii) does not contain a Group A, Group B, or Group C major occupancy, and

b) the panels
   i) do not contain an air space,
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2) Factory-assembled exterior wall panels containing thermosetting foamed plastic insulation are permitted to be used in a building required to be of noncombustible construction, provided

   a) the building
      i) is not more than 18 m high, measured from grade to the underside of the roof, and
      ii) does not contain a Group B or Group C major occupancy, and
   b) the wall panels
      i) do not contain an air space,
      ii) are protected on both sides by sheet steel not less than 0.38 mm thick,
      iii) remain in place for not less than 10 min when tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials,” where the exposed surface includes typical vertical and horizontal joints, and
      iv) when a sample panel with an assembled joint typical of field installation is subjected to the applicable test described in Subsection 3.1.12., have a flame-spread rating not more than that permitted for the room or space that they bound.

3) A walk-in cooler or freezer consisting of factory-assembled wall, floor or ceiling panels containing foamed plastic insulation with a flame-spread rating not more than 500 is permitted to be used in a building required to be of noncombustible construction, provided

   a) the building is sprinklered, and
   b) the panels
      i) are protected on both sides by sheet metal not less than 0.38 mm thick with a melting point not less than 650°C,
      ii) do not contain an air space,
      iii) when tested in accordance with CAN/ULC-S138, “Test for Fire Growth of Insulated Building Panels in a Full-Scale Room Configuration,” meet the criteria defined therein, and
      iv) when a sample panel with an assembled joint typical of field installation is subjected to the applicable test described in Subsection 3.1.12., have a flame-spread rating not more than that permitted for the space in which they are located or the space that they bound, as applicable.

(See Note A-3.1.4.2.(2) and 3.1.5.7.(3).)

3.1.5.8. Nailing Elements

1) Wood nailing elements attached directly to or set into a continuous noncombustible backing for the attachment of interior finishes are permitted in a building required to be of noncombustible construction provided the concealed space created by the wood elements is not more than 50 mm thick.

3.1.5.9. Combustible Millwork

1) Combustible millwork, including interior trim, doors and door frames, show windows together with their frames, aprons and backing, handrails, shelves, cabinets and counters, is permitted in a building required to be of noncombustible construction.

3.1.5.10. Combustible Flooring Elements

1) Combustible stage flooring supported on noncombustible structural members is permitted in a building required to be of noncombustible construction.
2) Wood members more than 50 mm but not more than 300 mm high applied directly to or set into a noncombustible floor slab are permitted for the construction of a raised platform in a building required to be of noncombustible construction provided the concealed spaces created are divided into compartments by fire blocks in conformance with Sentence 3.1.11.3.(2).

3) The floor system for the raised platform referred to in Sentence (2) is permitted to include a combustible subfloor and combustible finished flooring.

4) Combustible finished flooring is permitted in a building required to be of noncombustible construction.

3.1.5.11. Combustible Stairs in Dwelling Units

1) Combustible stairs are permitted in a dwelling unit in a building required to be of noncombustible construction.

3.1.5.12. Combustible Interior Finishes

1) Except as permitted in Sentences (2) and (3), combustible interior wall and ceiling finishes referred to in Clause 3.1.13.1.(2)(b) that are not more than 1 mm thick are permitted in a building required to be of noncombustible construction.

2) Combustible interior wall finishes, other than foamed plastics, that are not more than 25 mm thick are permitted in a building required to be of noncombustible construction, provided they have a flame-spread rating not more than 150 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction.

3) Except as provided in Sentence (4), combustible interior ceiling finishes, other than foamed plastics, that are not more than 25 mm thick are permitted in a building required to be of noncombustible construction, provided they have a flame-spread rating not more than 25 on any exposed surface or on any surface that would be exposed by cutting through the material in any direction, except that not more than 10% of the ceiling area within each fire compartment is permitted to have a flame-spread rating not more than 150.

4) Combustible interior ceiling finishes made of fire-retardant-treated wood are permitted in a building required to be of noncombustible construction, provided they are not more than 25 mm thick or are exposed fire-retardant-treated wood battens.

3.1.5.13. Gypsum Board

1) Gypsum board with a tightly adhering paper covering not more than 1 mm thick is permitted in a building required to be of noncombustible construction provided the flame-spread rating on the surface is not more than 25.

3.1.5.14. Combustible Insulation

(See Notes A-3.1.4.2. and A-3.1.4.2.(1).)

1) Foamed plastic insulation shall conform to Article 3.1.5.15.

2) Combustible insulation with a flame-spread rating not more than 25 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in a building required to be of noncombustible construction.

3) Combustible insulation is permitted to be installed above roof decks, outside of foundation walls below ground level, and beneath concrete slabs-on-ground of buildings required to be of noncombustible construction.

4) Except as provided in Sentences (5) and (6), combustible insulation with a flame-spread rating more than 25 but not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in a building required to be of noncombustible construction, provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of

   a) not less than 12.7 mm thick gypsum board mechanically fastened to a supporting assembly independent of the insulation,
   b) lath and plaster, mechanically fastened to a supporting assembly independent of the insulation,
   c) masonry, or
   d) concrete.
5) **Combustible insulation with a flame-spread rating more than 25 but not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in the exterior walls of a building required to be of noncombustible construction that is not sprinklered and is more than 18 m high, measured from grade to the underside of the roof, provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of**

   a) gypsum board not less than 12.7 mm thick, mechanically fastened to a supporting assembly independent of the insulation and with all joints either backed or taped and filled,
   
   b) masonry or concrete not less than 25 mm thick, or
   
   d) any thermal barrier that, when tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials,” will not develop an average temperature rise more than 140°C or a maximum temperature rise more than 180°C at any point on its unexposed face within 10 min (see Note A-3.1.5.14.(5)(d)) (see also Article 3.2.3.7.).

6) **Combustible insulation with a flame-spread rating more than 25 but not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in the interior walls, within ceilings and within roof assemblies of a building required to be of noncombustible construction that is not sprinklered and is more than 18 m high, measured from grade to the underside of the roof, provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of**

   a) Type X gypsum board not less than 15.9 mm thick, mechanically fastened to a supporting assembly independent of the insulation and with all joints either backed or taped and filled, conforming to

      i) ASTM C 1177/C 1177M, “Glass Mat Gypsum Substrate for Use as Sheathing,”
      ii) ASTM C 1178/C 1178M, “Coated Glass Mat Water-Resistant Gypsum Backing Panel,”
      iii) ASTM C 1396/C 1396M, “Gypsum Board,”
      iv) ASTM C 1658/C 1658M, “Glass Mat Gypsum Panels,” or
      v) CAN/CSA-A82.27-M, “Gypsum Board,”

   b) non-loadbearing masonry or concrete not less than 50 mm thick,
   
   c) loadbearing masonry or concrete not less than 75 mm thick, or
   
   d) any thermal barrier that, when tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials,”

      i) does not develop an average temperature rise more than 140°C or a maximum temperature rise more than 180°C at any point on its unexposed face within 20 min, and
      ii) remains in place for not less than 40 min.

### 3.1.5.15. Foamed Plastic Insulation

(See Notes A-3.1.4.2. and A-3.1.4.2.(1.).)

1) Foamed plastic insulation is permitted to be installed above roof decks, outside of foundation walls below ground level, and beneath concrete slabs-on-ground of a building required to be of noncombustible construction.

2) Except as provided in Sentences (3) and (4), foamed plastic insulation with a flame-spread rating not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in a building required to be of noncombustible construction, provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of

   a) not less than 12.7 mm thick gypsum board mechanically fastened to a supporting assembly independent of the insulation,
   
   b) masonry,
   
   c) concrete, or
e) any thermal barrier that meets the requirements of classification B when tested in conformance with CAN/ULC-S124, “Test for the Evaluation of Protective Coverings for Foamed Plastic.”

3) Foamed plastic insulation with a flame-spread rating more than 25 but not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in the exterior walls of a building required to be of noncombustible construction that is not sprinklered and is more than 18 m high, measured from grade to the underside of the roof, provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of

- a) gypsum board not less than 12.7 mm thick, mechanically fastened to a supporting assembly independent of the insulation and with all joints either backed or taped and filled,
- b) lath and plaster, mechanically fastened to a supporting assembly independent of the insulation,
- c) masonry or concrete not less than 25 mm thick, or
- d) any thermal barrier that, when tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials,” does not develop an average temperature rise more than 140°C or a maximum temperature rise more than 180°C at any point on its unexposed face within 10 min (see Note A-3.1.5.14.(5)(d)) (see also Article 3.2.3.7).

4) Foamed plastic insulation with a flame-spread rating more than 25 but not more than 500 on any exposed surface, or any surface that would be exposed by cutting through the material in any direction, is permitted in the interior walls, within ceilings and within roof assemblies of a building required to be of noncombustible construction that is not sprinklered and is more than 18 m high, measured from grade to the underside of the roof, provided the insulation is protected from adjacent space in the building, other than adjacent concealed spaces within wall assemblies, by a thermal barrier consisting of

- a) Type X gypsum board not less than 15.9 mm thick, mechanically fastened to a supporting assembly independent of the insulation and with all joints either backed or taped and filled, conforming to
  - i) ASTM C 1177/C 1177M, “Glass Mat Gypsum Substrate for Use as Sheathing,”
  - ii) ASTM C 1178/C 1178M, “Coated Glass Mat Water-Resistant Gypsum Backing Panel,”
  - iii) ASTM C 1396/C 1396M, “Gypsum Board,” or
  - iv) CAN/CSA-A82.27-M, “Gypsum Board,”
- b) non-loadbearing masonry or concrete not less than 50 mm thick,
- c) loadbearing masonry or concrete not less than 75 mm thick, or
- d) any thermal barrier that, when tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials,”
  - i) does not develop an average temperature rise more than 140°C or a maximum temperature rise more than 180°C at any point on its unexposed face within 20 min, and
  - ii) remains in place for not less than 40 min.

3.1.5.16. Combustible Elements in Partitions

1) Except as permitted by Sentence (2), solid lumber partitions not less than 38 mm thick and wood framing in partitions located in a fire compartment not more than 600 m² in area are permitted to be used in a building required to be of noncombustible construction in a floor area that is not sprinklered throughout provided the partitions
   - a) are not required fire separations, and
   - b) are not located in a care, treatment or detention occupancy.

2) Partitions installed in a building of noncombustible construction are permitted to contain wood framing provided
   - a) the building is not more than 3 storeys in building height,
   - b) the partitions are not located in a care, treatment or detention occupancy, and
   - c) the partitions are not installed as enclosures for exits or vertical service spaces.

3) Solid lumber partitions not less than 38 mm thick and partitions that contain wood framing are permitted to be used in a building required to be of noncombustible construction provided
   - a) the building is sprinklered throughout, and...
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b) the partitions are not
   i) located in a care, treatment or detention occupancy,
   ii) installed as enclosures for exits or vertical service spaces, or
   iii) used to satisfy the requirements of Clause 3.2.8.1.(1)(a).

3.1.5.17. Storage Lockers in Residential Buildings

1) Storage lockers in storage rooms are permitted to be constructed of wood in a building of residential occupancy required to be of noncombustible construction.

3.1.5.18. Combustible Ducts

1) Except as required by Sentence 3.6.4.3.(1), combustible ducts, including plenums and duct connectors, are permitted to be used in a building required to be of noncombustible construction provided these ducts and duct connectors are used only in horizontal runs.

2) Combustible duct linings, duct coverings, duct insulation, vibration isolation connectors, duct tape, pipe insulation and pipe coverings are permitted to be used in a building required to be of noncombustible construction provided they conform to the appropriate requirements of Subsection 3.6.5.

3) In a building required to be of noncombustible construction, combustible ducts need not comply with the requirements of Sentences 3.6.5.1.(1) and (2) provided the ducts are
   a) part of a duct system conveying only ventilation air, and
   b) contained entirely within a dwelling unit.

3.1.5.19. Combustible Piping Materials

1) Except as permitted by Clause 3.1.5.2.(1)(d) and Sentences (2) and (3), combustible piping and tubing and associated adhesives are permitted to be used in a building required to be of noncombustible construction provided that, except when concealed in a wall or concrete floor slab, they
   a) have a flame-spread rating not more than 25, and
   b) if used in a building described in Subsection 3.2.6., have a smoke developed classification not more than 50.

2) Combustible sprinkler piping is permitted to be used within a sprinklered floor area in a building required to be of noncombustible construction. (See also Article 3.2.5.13.)

3) Polypropylene pipes and fittings are permitted to be used for drain, waste and vent piping for the conveyance of highly corrosive materials and for piping used to distribute distilled or dialyzed water in laboratory and hospital facilities in a building required to be of noncombustible construction, provided
   a) the building is sprinklered throughout,
   b) the piping is not located in a vertical shaft, and
   c) piping that penetrates a fire separation is sealed at the penetration by a fire stop that has an FT rating not less than the fire-resistance rating of the fire separation when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems,” with a pressure differential of 50 Pa between the exposed and unexposed sides, with the higher pressure on the exposed side.

3.1.5.20. Combustible Plumbing Fixtures

1) Combustible plumbing fixtures, including wall and ceiling enclosures that form part of the plumbing fixture, are permitted in a building required to be of noncombustible construction provided they are constructed of material having a flame-spread rating and smoke developed classification not more than that permitted for the wall surface of the room or space in which they are installed.

3.1.5.21. Wires and Cables

1) Except as required by Sentence (2) and Article 3.1.5.22., optical fibre cables and electrical wires and cables with combustible insulation, jackets or sheathes are permitted in a building required to be of noncombustible construction, provided
a) the wires and cables exhibit a vertical char of not more than 1.5 m when tested in conformance with the Vertical Flame Test – Cables in Cable Trays (FT4 rating) in CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables,”

b) the wires and cables are located in
   i) totally enclosed noncombustible raceways (see Note A-3.1.4.3.(1)(b)(i)),
   ii) masonry walls,
   iii) concrete slabs,
   iv) a service room separated from the remainder of the building by a fire separation having a fire-resistance rating not less than 1 h, or
   v) totally enclosed non-metallic raceways conforming to Clause 3.1.5.23.(1)(b), or

c) the wires and cables are communication cables used at the service entry to a building and are not more than 3 m long.
(See Note A-3.1.5.21.(1).)

2) Except as permitted in Sentences (3) and (4), optical fibre cables and electrical wires and cables with combustible insulation, jackets or sheathes that are used for the transmission of voice, sound or data and are not located in totally enclosed noncombustible raceways are permitted to be installed in a plenum in a building required to be of noncombustible construction, provided the wires and cables exhibit a horizontal flame distance of not more than 1.5 m, an average optical smoke density of not more than 0.15, and a peak optical smoke density of not more than 0.5 when tested in conformance with CAN/ULC-S102.4, “Standard Method of Test for Fire and Smoke Characteristics of Electrical Wiring, Cables and Non-Metallic Raceways,” (FT6 rating).

3) Except as permitted in Sentence (4), where totally enclosed noncombustible raceways are used in a plenum, exposed components of wiring systems with combustible insulation, jackets or sheathes, including optical fibre cables and electrical wires and cables that are used for the transmission of voice, sound or data, that are installed in the plenum or that extend not more than 9 m from the plenum including drop down to the floor level, are permitted provided they exhibit a vertical char of not more than 1.5 m when tested in conformance with the Vertical Flame Test – Cables in Cable Trays (FT4 rating) in CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables.”

4) Cables or wires within plenums that are used for the transmission of signals in fire alarm systems need not comply with the requirements of Sentences (2) and (3).

3.1.5.22. Combustible Travelling Cables for Elevators

1) Combustible travelling cables are permitted on elevating devices in a building required to be of noncombustible construction.

3.1.5.23. Non-metallic Raceways

1) Except as required in Sentence (2), subject to the limits on the size of elements that penetrate fire separations as stated in Sentence 3.1.9.3.(2), within a fire compartment of a building required to be of noncombustible construction, totally enclosed non-metallic raceways not more than 175 mm in outside diameter, or of an equivalent rectangular area, are permitted to be used to enclose optical fibre cables and electrical wires and cables, provided
   a) where the wires and cables in the raceways meet or exceed the requirements of Clause 3.1.5.21.(1)(a), the non-metallic raceways meet the requirements for at least an FT4 rating in
      i) CAN/CSA-C22.2 No. 262, “Optical Fiber Cable and Communication Cable Raceway Systems,” or
      ii) CAN/ULC-S143, “Fire Tests for Non-Metallic Electrical and Optical Fibre Cable Raceway Systems,” and
   b) where the wires and cables in the raceways do not meet or exceed the requirements of Clause 3.1.5.21.(1)(a), the non-metallic raceways exhibit a vertical char of not more than 1.5 m when tested in conformance with the Vertical Flame Test (FT4) – Conduit or Tubing on Cable Tray in Clause 6.16 of CSA C22.2 No. 211.0, “General Requirements and Methods of Testing for Nonmetallic Conduit.”
2) Totally enclosed non-metallic raceways used in a plenum in a building required to be of noncombustible construction shall exhibit a horizontal flame distance of not more than 1.5 m, an average optical smoke density of not more than 0.15, and a peak optical smoke density of not more than 0.5 when tested in conformance with CAN/ULC-S102.4, “Standard Method of Test for Fire and Smoke Characteristics of Electrical Wiring, Cables and Non-Metallic Raceways,” (FT6 rating).

3.1.5.24. Decorative Wood Cladding

1) On buildings required to be of noncombustible construction, decorative wood cladding is permitted to be used on the exterior fascias and soffits of marquees or canopies on the building face of a storey having direct access to a street or access route, provided the wood cladding is fire-retardant-treated wood that has been conditioned in conformance with ASTM D 2898, “Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing,” before being tested in accordance with CAN/ULC-S102, “Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.”

3.1.6. Tents and Air-Supported Structures

(See Note A-3.1.6.)

3.1.6.1. Means of Egress

1) Tents and air-supported structures shall conform to Sections 3.3. and 3.4.

3.1.6.2. Restrictions

1) An air-supported structure shall not be located above the first storey on any building.

2) An air-supported structure shall not be used for Groups B, C, or Group F, Division 1 major occupancies or for classrooms.

3) An air-supported structure shall be designed as open floor space without interior walls, mezzanines, intermediate floors or similar construction.

3.1.6.3. Clearance to Other Structures

1) Except as permitted by Sentences (2), (3) and (4), every tent and air-supported structure shall conform to Subsection 3.2.3.

2) Tents and air-supported structures
   a) shall not be erected closer than 3 m to other structures on the same property except as permitted by Sentences (3) and (4), and
   b) shall be sufficiently distant from one another to provide an area to be used as a means of emergency egress.

3) Tents and air-supported structures not occupied by the public
   a) need not be separated from one another, and
   b) are permitted to be erected less than 3 m from other structures on the same property provided this spacing does not create a hazard to the public.

4) Tents not more than 120 m² in ground area, located on fair grounds or similar open spaces, need not be separated from one another provided this does not create a hazard to the public.

3.1.6.4. Clearance to Flammable Material

1) The ground enclosed by a tent or air-supported structure and not less than 3 m of ground outside the structure shall be cleared of all flammable material or vegetation that will spread fire.

3.1.6.5. Flame Resistance

1) Every tent and air-supported structure and all tarpaulins and decorative materials used in connection with these structures shall conform to CAN/ULC-S109, “Flame Tests of Flame-Resistant Fabrics and Films.”
3.1.6.6. Emergency Air Supply

1) An air-supported structure used as a place of assembly for more than 200 persons shall have either
   a) an automatic emergency engine-generator set capable of powering one blower continuously for 4 h, or
   b) a supplementary blower powered by an automatic internal combustion engine.

3.1.6.7. Electrical Systems

1) The electrical system and equipment in a tent or air-supported structure, including electrical fuses and switches, shall be inaccessible to the public.

2) Cables on the ground in areas used by the public in a tent or air-supported structure shall be placed in trenches or protected by covers to prevent damage from traffic.

3.1.7. Fire-Resistance Ratings

3.1.7.1. Determination of Ratings

1) Except as permitted by Sentence (2) and Articles 3.1.7.2. and 3.6.3.5., the rating of a material, assembly of materials or a structural member that is required to have a fire-resistance rating, shall be determined on the basis of the results of tests conducted in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials.”

2) A material, assembly of materials or a structural member is permitted to be assigned a fire-resistance rating on the basis of Appendix D.

3) A ceiling assembly is permitted to be assigned a fire-resistance rating on the basis of Assembly Number R1 in Table A-9.10.3.1.-B.

4) A ceiling membrane is permitted to be assigned a fire-resistance rating on the basis of Assembly Number M1 or M2 in Table A-9.10.3.1.-B.

3.1.7.2. Exception for Exterior Walls

1) The limit on the rise of temperature on the unexposed surface of an assembly as required by the tests referred to in Sentence 3.1.7.1.(1) shall not apply to an exterior wall that has a limiting distance of 1.2 m or more, provided correction is made for radiation from the unexposed surface in accordance with Sentence 3.2.3.1.(9).

3.1.7.3. Exposure Conditions for Rating

1) Floor, roof and ceiling assemblies shall be rated for exposure to fire on the underside.

2) Firewalls and interior vertical fire separations shall be rated for exposure to fire on each side.

3) Exterior walls shall be rated for exposure to fire from inside the building.

3.1.7.4. Minimum Fire-Resistance Rating

1) The use of materials or assemblies having a greater fire-resistance rating than required shall impose no obligation to exceed in whole or in part the minimum fire-resistance ratings required by this Part.

3.1.7.5. Rating of Supporting Construction

1) Except as permitted by Sentence (2) and by Articles 3.2.2.20. to 3.2.2.90. for mixed types of construction, all loadbearing walls, columns and arches in the storey immediately below a floor or roof assembly required to have a fire-resistance rating shall have a fire-resistance rating not less than that required for the supported floor or roof assembly.

2) Loadbearing walls, columns and arches supporting a service room or service space need not conform to Sentence (1).

3) Except for noncombustible roof assemblies required by Clauses 3.2.2.50.(2)(c) and 3.2.2.58.(2)(c), if an assembly is required to be of noncombustible construction and have a fire-resistance rating, it shall be supported by noncombustible construction.
3.1.8. **Fire Separations and Closures**

3.1.8.1. **General Requirements**

1) Any wall, partition or floor assembly required to be a fire separation shall
   a) except as permitted by Sentence (2), be constructed as a continuous element, and
   b) as required in this Part, have a fire-resistance rating as specified (see Note A-3.1.8.1.(b)).

2) Openings in a fire separation shall be protected with closures, shafts or other means in conformance with Articles 3.1.8.4. to 3.1.8.19. and Subsections 3.1.9. and 3.2.8. (See Note A-3.1.8.1.(2).)

3.1.8.2. **Combustible Construction Support**

1) Combustible construction that abuts on or is supported by a noncombustible fire separation shall be constructed so that its collapse under fire conditions will not cause the collapse of the fire separation.

3.1.8.3. **Continuity of Fire Separations**

1) Except as permitted by Sentence 3.6.4.2.(2), a horizontal service space or other concealed space located above a required vertical fire separation, including the walls of a vertical shaft, shall be divided at the fire separation by an equivalent fire separation within the service space.

2) The fire separation required by Sentence (1) shall terminate so that smoke-tight joints are provided where it abuts on or intersects
   a) a floor,
   b) a roof slab, or
   c) a roof deck.

3) Except as required by Subsection 3.6.3. for a shaft penetrating a roof assembly, a shaft, including an exit enclosure, that penetrates a fire separation, shall
   a) extend through any horizontal service space or any other concealed space, and
   b) terminate so that smoke-tight joints are provided where the shaft abuts on or intersects
      i) a floor,
      ii) a roof slab, or
      iii) a roof deck.

4) The continuity of a fire separation shall be maintained where it abuts another fire separation, a floor, a ceiling, a roof, or an exterior wall assembly. (See Note A-3.1.8.3.(4).)

3.1.8.4. **Determination of Ratings and Classifications**

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.)

2) Except as permitted by Sentence 3.1.8.12.(1), the fire-protection rating of a closure shall conform to Table 3.1.8.4. for the required fire-resistance rating of the fire separation.

3) The leakage rate of smoke dampers and combination smoke/fire dampers shall
   a) be determined in accordance with the applicable provisions in CAN/ULC-S112.1, “Leakage Rated Dampers for Use in Smoke Control Systems,” and
   b) conform to Class I, II or III of that standard.

4) The leakage rate of a door assembly shall be determined in accordance with ANSI/UL-1784, “Air Leakage Tests of Door Assemblies and Other Opening Protectives.”
### 3.1.8.5. Installation of Closures

1) Except where fire dampers, window assemblies and glass block are used as closures, closures of the same fire-protection rating installed on opposite sides of the same opening are deemed to have a fire-protection rating equal to the sum of the fire-protection ratings of the closures. (See Note A-3.1.8.1.(2).)

2) Except as otherwise specified in this Part, every door, fire damper, window assembly or glass block used as a closure in a required fire separation shall be installed in conformance with NFPA 80, “Fire Doors and Other Opening Protectives.” (See Note A-3.1.8.1.(2).)

3) Except as otherwise specified in this Part, every smoke damper or combination smoke/fire damper used as a closure in a required fire separation shall be installed in conformance with NFPA 105, “Smoke Door Assemblies and Other Opening Protectives.”

4) If a door is installed such that it could damage the integrity of a fire separation if its swing is unrestricted, door stops shall be installed to prevent the damage.

5) Protective guarding devices shall be
   a) provided where necessary to prevent damage to the mechanical components of doors in fire separations, and
   b) installed so as not to interfere with the proper operation of the doors.

6) A leakage-rated door assembly complying with Sentence 3.1.8.4.(4) shall be installed in
   a) fire separations in protected floor areas referred to in Clause 3.3.1.7.(1)(b),
   b) fire separations in care or treatment occupancies referred to in Sentence 3.3.3.5.(4),
   c) except as provided in Sentence (8), fire separations of public corridors serving dwelling units in storeys that are not sprinklered, and
   d) firewalls that are a horizontal exit referred to in Sentence 3.3.3.5.(3).

7) Leakage-rated door assemblies required by Sentence (6) shall be installed in accordance with NFPA 105, “Smoke Door Assemblies and Other Opening Protectives.”

8) A leakage-rated door assembly need not be installed where a dwelling unit served by a public corridor has
   a) a second and separate means of egress, or
   b) an open-air balcony that is sized to accommodate the number of occupants for which the dwelling unit is intended.

### 3.1.8.6. Maximum Openings

1) The size of an opening in an interior fire separation required to be protected with a closure shall be not more than 11 m², with no dimension more than 3.7 m, if a fire compartment on either side of the fire separation is not sprinklered.

2) The size of an opening in an interior fire separation required to be protected with a closure shall be not more than 22 m², with no dimension more than 6 m, provided the compartments on both sides of the fire separation are sprinklered.
3.1.8.7. Location of Fire Dampers and Smoke Dampers

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.

2) Except as provided in Article 3.1.8.9., a smoke damper or a combination smoke/fire damper shall be installed in conformance with Article 3.1.8.11. 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, 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).

3.1.8.8. Fire Dampers Waived

1) Except as provided in Sentence (2), the requirement for fire dampers stated in Sentence 3.1.8.7.(1) is permitted to be waived for
   a) ducts that serve commercial cooking equipment (see also Article 6.3.1.7.),
   b) continuous noncombustible ducts having a melting point above 760°C that penetrate a vertical fire separation required by Sentence 3.3.1.1.(1) between suites of assembly, mercantile, low-hazard industrial, medium-hazard industrial or high-hazard industrial occupancy,
   c) ducts or air-transfer openings that penetrate a vertical fire separation not required to have a fire-resistance rating, or
   d) noncombustible ducts or air-transfer openings that penetrate a horizontal fire separation not required to have a fire-resistance rating.

2) The requirement for fire dampers stated in Sentence 3.1.8.7.(1) is permitted to be waived for noncombustible branch ducts having a melting point above 760°C that penetrate a fire separation, provided the ducts
   a) have a cross-sectional area not more than 0.013 m² and serve only air-conditioning units or combined air-conditioning and heating units discharging air not more than 1.2 m above the floor, or
   b) extend not less than 500 mm inside exhaust duct risers that are under negative pressure and in which the airflow is upward as required by Article 3.6.3.4., or
   c) where the fire separation separates a vertical service space from the remainder of the building, provided each individual duct exhausts directly to the outdoors at the top of the vertical service space.

3.1.8.9. Smoke Dampers Waived

1) Except as provided in Sentence (2), the requirement for smoke dampers or combination smoke/fire dampers stated in Sentence 3.1.8.7.(2) is permitted to be waived for ducts
   a) that serve commercial cooking equipment (see also Article 6.3.1.7.),
   b) in which all inlet and outlet openings serve not more than one fire compartment, or
   c) 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
      i) the movement of air is continuous, and
      ii) the configuration of the air-handling system prevents the recirculation of exhaust or return air under fire emergency conditions.

2) The requirement for smoke dampers or combination smoke/fire dampers stated in Sentence 3.1.8.7.(2) is permitted to be waived for noncombustible branch ducts having a melting point above 760°C that penetrate a fire separation, provided the ducts
   a) have a cross-sectional area not more than 0.013 m² and serve only air-conditioning units or combined air-conditioning and heating units discharging air not more than 1.2 m above the floor,
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).)

2) A fire damper shall be arranged so as to close automatically upon the operation of a fusible link conforming to ULC-S505, “Fusible Links for Fire Protection Service,” or other heat-actuated or smoke-actuated device.

3) A heat-actuated device referred to in Sentence (2) shall
   a) be located where it is readily affected by an abnormal rise in temperature in the duct, and
   b) have a temperature rating approximately 30°C above the maximum temperature that would exist in the system, whether it is in operation or shut down.

4) A fire damper tested in the vertical or horizontal position shall be installed in the position in which it was tested.

5) A tightly fitted access door shall be installed for each fire damper to provide access for the inspection of the damper and the resetting of the release device. (See Note A-3.1.8.10.(5).)

3.1.8.11. Installation of Smoke Dampers

1) Where smoke dampers are used as a closure in an air-transfer opening, they shall be installed in the plane of the fire separation.

2) Where combination smoke/fire dampers are used as a closure in a duct, they shall be installed within 610 mm of the plane of the fire separation, provided there is no inlet or outlet opening between the fire separation and the damper.

3) Except as required by a smoke control system, smoke dampers and combination smoke/fire dampers shall be configured so as to close automatically upon a signal from an adjacent smoke detector located as described in CAN/ULC-S524, “Installation of Fire Alarm Systems,” within 1.5 m horizontally of the duct or air-transfer opening in the fire separation
   a) on both sides of the air-transfer opening, or
   b) in the duct downstream of the smoke damper or combination smoke/fire damper.

4) Smoke dampers or combination smoke/fire dampers shall be installed in the vertical or horizontal position in which they were tested.

5) A tightly fitted access door shall be installed for each smoke damper and combination smoke/fire damper to provide access for their inspection and the resetting of the release device. (See Note A-3.1.8.10.(5).)

3.1.8.12. Twenty-Minute Closures

1) A door assembly having a fire-protection rating not less than 20 min is permitted to be used as a closure in
   a) a fire separation not required to have a fire-resistance rating more than 1 h, located between
      i) a public corridor and a suite,
      ii) a corridor and adjacent sleeping rooms, or
      iii) a corridor and adjacent classrooms, offices and libraries in Group A, Division 2 major occupancies, or
   b) a fire separation not required to have a fire-resistance rating more than 45 min, located in a building not more than 3 storeys in building height.

2) The requirements for noncombustible sills and combustible floor coverings in NFPA 80, “Fire Doors and Other Opening Protectives,” do not apply to a door described in Sentence (1).

3) A door described in Sentence (1) shall have clearances of not more than 6 mm at the bottom and not more than 3 mm at the sides and top.
3.1.8.13. **Self-closing Devices**

1) Except as permitted by Sentence (2), every door in a fire separation, other than doors to freight elevators and dumbwaiters, shall be equipped with a self-closing device designed to return the door to the closed position after each use.

2) A self-closing device need not be provided on a door that is located between
   a) a classroom and a corridor providing access to exit from the classroom in a building that is not more than 3 storeys in building height,
   b) a public corridor and an adjacent room of business and personal services occupancy in a building that is not more than 3 storeys in building height provided the door is not located in a dead-end portion of the corridor,
   c) a patients’ sleeping room and a corridor serving the patients’ sleeping room, provided the room and corridor are within a fire compartment in a hospital or nursing home with treatment that complies with the requirements of Article 3.3.3.5., or
   d) a patients’ sleeping room and an adjacent room that serves the patients’ sleeping room, provided these rooms are within a fire compartment in a hospital or nursing home with treatment that complies with the requirements of Article 3.3.3.5.

3.1.8.14. **Hold-Open Devices**

1) Except as provided in Sentences 3.1.8.10.(2) and 3.1.8.11.(3), a hold-open device is permitted to be used on a closure in a required fire separation, other than on an exit stair door in a building more than 3 storeys in building height and on a door for a vestibule required by Article 3.3.5.7., provided the device is designed to release the closure in conformance with this Article.

2) Except as provided in Sentences (5) and (6), where the building is provided with a fire alarm system, a hold-open device permitted by Sentence (1) shall release
   a) in a single-stage system, upon any signal from the fire alarm system, and
   b) in a 2-stage system,
      i) upon any alert signal from the fire alarm system, or
      ii) upon actuation of any adjacent smoke detectors.

3) Where the building is provided with a fire alarm system, a hold-open device permitted by Sentence (1) shall release upon a signal from a smoke detector connected to the fire alarm system and located as described in CAN/ULC-S524, “Installation of Fire Alarm Systems,” where the hold-open device is used on
   a) an exit door,
   b) a door opening into a public corridor,
   c) an egress door referred to in Sentence 3.4.2.4.(2),
   d) a closure serving an assembly, care, treatment, detention, or residential occupancy,
   e) a door in a fire separation referred to in Clause 3.3.1.7.(1)(b) or Sentence 3.3.3.5.(4), or
   f) a door required to function as part of a smoke control system.

4) Where the building is not provided with a fire alarm system, a hold-open device permitted by Sentence (1) shall release upon a signal from a smoke alarm located on each side of the fire separation at ceiling level within 1.5 m horizontally of the closure opening in the fire separation, where the hold-open device is used on closures described in Clauses (3)(a) to (e).

5) Where a hold-open device is used on closures other than those described in Sentences (3) and (4), it is permitted to be released upon actuation of a heat-actuated device.

6) A hold-open device used on a door located between a corridor used by the public and an adjacent sleeping room in a treatment occupancy need not release automatically as stated in Sentence (2).

3.1.8.15. **Door Latches**

1) Except as permitted by Article 3.3.3.5., a swing-type door in a fire separation shall be equipped with a positive latching mechanism designed to hold the door in the closed position after each use.
3.1.8.16.  Wired Glass and Glass Block

1) Except as permitted by Articles 3.1.8.18. and 3.1.8.19. for the separation of exits, an opening in a fire separation having a fire-resistance rating not more than 1 h is permitted to be protected with fixed wired glass assemblies or glass blocks installed in conformance with NFPA 80, “Fire Doors and Other Opening Protectives.”

2) Wired glass assemblies permitted by Sentence (1) and described in Appendix D are permitted to be used as closures in vertical fire separations without being tested in accordance with Sentence 3.1.8.4.(1).

3) Glass blocks permitted by Sentence (1) shall be installed in accordance with Subsection 4.3.2. and reinforced with steel reinforcement in each horizontal joint.

3.1.8.17.  Temperature Rise Limit for Doors

1) Except as permitted by Article 3.1.8.19., the maximum temperature rise on the opaque portion of the unexposed side of a door used as a closure in a fire separation in a location shown in Table 3.1.8.17. shall conform to the Table when tested in conformance with Sentence 3.1.8.4.(1).

<table>
<thead>
<tr>
<th>Location</th>
<th>Minimum Required Fire-Protection Rating of Door</th>
<th>Maximum Temperature Rise on Opaque Portion of Unexposed Side of Door, °C</th>
<th>Maximum Area of Wired Glass in Door, m²</th>
<th>Maximum Aggregate Area of Glass Block and Wired Glass Panels not in a Door, m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between a dead-end corridor and an adjacent occupancy where the corridor provides the only access to exit and is required to have a fire-resistance rating</td>
<td>Less than 45 min</td>
<td>No limit</td>
<td>No limit</td>
<td>No limit</td>
</tr>
<tr>
<td>45 min</td>
<td>250 after 30 min</td>
<td>0.0645</td>
<td>0.0645</td>
<td></td>
</tr>
<tr>
<td>Between an exit enclosure and the adjacent floor area in a building not more than 3 storeys in building height</td>
<td>All ratings</td>
<td>No limit</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Between an exit enclosure and the adjacent floor area (except as permitted above)</td>
<td>45 min</td>
<td>250 after 30 min</td>
<td>0.0645</td>
<td>0.0645</td>
</tr>
<tr>
<td>1.5 h</td>
<td>250 after 1 h</td>
<td>0.0645</td>
<td>0.0645</td>
<td></td>
</tr>
<tr>
<td>2 h</td>
<td>250 after 1 h</td>
<td>0.0645</td>
<td>0.0645</td>
<td></td>
</tr>
<tr>
<td>In a firewall</td>
<td>1.5 h</td>
<td>250 after 30 min</td>
<td>0.0645</td>
<td>0</td>
</tr>
<tr>
<td>3 h</td>
<td>250 after 1 h</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

3.1.8.18.  Area Limits for Wired Glass and Glass Block

1) Except as permitted by Article 3.1.8.19., the maximum area of wired glass in a door used in the locations shown in Table 3.1.8.17. shall conform to the Table. (See Note A-3.1.8.18.(1).)

2) Except as permitted by Article 3.1.8.19., the maximum area of glass block and wired glass panels not in a door, used in the locations shown in Table 3.1.8.17., shall conform to the Table.

3.1.8.19.  Temperature Rise and Area Limits Waived

1) The temperature rise limits and glass area limits required by Articles 3.1.8.17. and 3.1.8.18. are waived for a closure between an exit enclosure and an enclosed vestibule or corridor, provided
   a) the vestibule or corridor is separated from the remainder of the floor area by a fire separation having a fire-resistance rating not less than 45 min,
   b) the fire separation required by Clause (a) contains no wired glass or glass block within 3 m of the closure into the exit enclosure, and
   c) the vestibule or corridor contains no occupancy.

(See Note A-3.1.8.19.(1).)
3.1.9. Penetrations in Fire Separations and Fire-Rated Assemblies

(See Note A-3.1.9.)

3.1.9.1. Fire Stops

1) Except as provided in Sentences (2) to (5) and Article 3.1.9.4., penetrations of a fire separation or a membrane forming part of an assembly required to have a fire-resistance rating shall be
   a) sealed by a fire stop that, when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems,” has an F rating not less than the fire-protection rating required for closures in the fire separation in conformance with Table 3.1.8.4.,
   b) cast in place (see Note A-3.1.9.1.(1)(b)), or
   c) tightly fitted (see Note A-3.1.9.1.(1)(c)).

(See also Article 3.1.9.5. for requirements regarding penetrations by combustible drain, waste and vent piping.)

2) Penetrations of a firewall or a horizontal fire separation that is required to have a fire-resistance rating in conformance with Article 3.2.1.2. shall be sealed at the penetration by a fire stop that, when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems,” has an FT rating not less than the fire-resistance rating for the fire separation.

3) Penetrations of a fire separation in conformance with Sentence 3.6.4.2.(2) shall be sealed by a fire stop that, when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems,” has an FT rating not less than the fire-resistance rating for the fire separation of the assembly.

4) Sprinklers are permitted to penetrate a fire separation or a membrane forming part of an assembly required to have a fire-resistance rating without having to meet the fire stop requirements of Sentences (1) to (3), provided the annular space created by the penetration of a fire sprinkler is covered by a metal escutcheon plate in accordance with NFPA 13, “Installation of Sprinkler Systems.”

5) Unless specifically designed with a fire stop, fire dampers are permitted to penetrate a fire separation or a membrane forming part of an assembly required to have a fire-resistance rating without having to meet the fire stop requirements of Sentences (1) to (3), provided the fire damper is installed in conformance with NFPA 80, “Fire Doors and Other Opening Protective.”

3.1.9.2. Combustibility of Service Penetrations

1) Except as permitted by Articles 3.1.9.3. and 3.1.9.5., pipes, ducts, electrical outlet boxes, totally enclosed raceways or other similar service equipment that penetrate an assembly required to have a fire-resistance rating shall be noncombustible, unless the assembly was tested incorporating that service equipment. (See Note A-3.1.9.2.(1).)

3.1.9.3. Penetration by Wires, Cables and Outlet Boxes

1) Optical fibre cables and electrical wires and cables in totally enclosed noncombustible raceways are permitted to penetrate an assembly required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2.

2) Except as permitted by Sentence (3), totally enclosed non-metallic raceways conforming to Article 3.1.5.23., optical fibre cables, and electrical wires and cables, single or grouped, with combustible insulation, jackets or sheathes that conform to the requirements of Clause 3.1.5.21.(1)(a) and that are not installed in totally enclosed noncombustible raceways are permitted to penetrate an assembly required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2., provided the overall diameter of the single or grouped wires or cables, or the raceways is not more than 25 mm.

3) Single conductor metal sheathed cables with combustible jacketing that are more than 25 mm in overall diameter are permitted to penetrate a fire separation required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2., provided the cables are not grouped and are spaced a minimum of 300 mm apart.

4) Combustible totally enclosed raceways that are embedded in a concrete floor slab are permitted in an assembly required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2., provided the concrete cover between the raceway and the bottom of the slab is not less than 50 mm.
5) **Combustible** outlet boxes are permitted in an assembly required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2., provided the opening through the membrane into the box is not more than 0.016 m².

### 3.1.9.4. Penetration by Outlet Boxes

(See Note A-3.1.9.4.)

1) Except as provided in Sentence (2), outlet boxes are permitted to penetrate the membrane of an assembly required to have a fire-resistance rating, provided they are sealed at the penetration by a fire stop that has an FT rating not less than the fire-resistance rating of the fire separation when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems.”

2) Except as provided in Sentences 3.1.9.1.(2) and (3), noncombustible outlet boxes that penetrate a vertical fire separation or a membrane forming part of an assembly required to have a fire-resistance rating are permitted to be waived, provided:

   a) they do not exceed
      i) 0.016 m² in area, and
      ii) an aggregate area of 0.065 m² in any 9.3 m² of surface area, and
   b) the annular space between the membrane and the noncombustible electrical outlet boxes does not exceed 3 mm.

3) In addition to the requirements of Sentence (2), outlet boxes on opposite sides of a vertical fire separation having a fire-resistance rating shall be separated by:

   a) a horizontal distance of not less than 600 mm, or
   b) a fire block conforming to Article 3.1.11.7.

### 3.1.9.5. Combustible Piping Penetrations

1) **Combustible** sprinkler piping is permitted to penetrate a fire separation provided the fire compartments on each side of the fire separation are sprinklered.

2) **Combustible** water distribution piping is permitted to penetrate a fire separation that is required to have a fire-resistance rating without being incorporated in the assembly at the time of testing as required by Article 3.1.9.2., provided the piping is protected at the penetration with a fire stop in conformance with Sentence (4).

3) Except as permitted by Sentences (4) to (5), combustible piping shall not be used in a drain, waste and vent piping system if any part of that system penetrates:

   a) a fire separation required to have a fire-resistance rating, or
   b) a membrane that forms part of an assembly required to have a fire-resistance rating.

4) **Combustible** drain, waste and vent piping is permitted to penetrate a fire separation required to have a fire-resistance rating or a membrane that forms part of an assembly required to have a fire-resistance rating, provided:

   a) the piping is sealed at the penetration by a fire stop that has an F rating not less than the fire-resistance rating required for the fire separation when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems,” with a pressure differential of 50 Pa between the exposed and unexposed sides, with the higher pressure on the exposed side, and
   b) the piping is not located in a vertical service space.

5) **Combustible** drain, waste and vent piping is permitted on one side of a vertical fire separation provided it is not located in a vertical service space.

6) **Combustible** piping for central vacuum systems is permitted to penetrate a fire separation provided the installation conforms to the requirements that apply to combustible drain, waste and vent piping specified in Sentence (4).
3.1.9.6. Openings for Ducts through a Membrane Ceiling

1) A membrane ceiling forming part of an assembly assigned a fire-resistance rating on the basis of Appendix D or Sentence 3.1.7.1.(4) is permitted to be penetrated by openings leading into ducts within the ceiling space, provided
   a) the ducts are sheet steel, and
   b) the number of openings and their protection conform to the requirements of Appendix D.

3.1.9.7. Plenums

1) A ceiling assembly used as a plenum shall conform to Article 3.6.4.3.

3.1.10. Firewalls

3.1.10.1. Prevention of Firewall Collapse

1) Except as permitted by Sentence (2), the connections and supports for structural framing members that are connected to or supported on a firewall and have a fire-resistance rating less than that required for the firewall, shall be designed so that the failure of the framing systems during a fire will not affect the integrity of the firewall during the fire.

2) Sentence (1) does not apply to a firewall consisting of two separate wall assemblies each tied to its respective building frame but not to each other, provided each wall assembly is
   a) a fire separation having one half of the fire-resistance rating required for the firewall by Sentences 3.1.10.2.(1) and (2), and
   b) designed so that the collapse of one wall assembly will not cause collapse of the other.

3) A firewall is permitted to be supported on the structural frame of a building of noncombustible construction provided the supporting frame has a fire-resistance rating not less than that required for the firewall.

4) Piping, ducts and totally enclosed noncombustible raceways shall be installed so that their collapse will not cause collapse of the firewall.

3.1.10.2. Rating of Firewalls

1) A firewall that separates a building or buildings with floor areas containing a Group E or a Group F, Division 1 or 2 major occupancy shall be constructed as a fire separation of noncombustible construction having a fire-resistance rating not less than 4 h, except that where the upper portion of a firewall separates floor areas containing other than Group E or Group F, Division 1 or 2 major occupancies, the fire-resistance rating of the upper portion of the firewall is permitted to be not less than 2 h.

2) A firewall that separates a building or buildings with floor areas containing major occupancies other than Group E or Group F, Division 1 or 2 shall be constructed as a fire separation of noncombustible construction having a fire-resistance rating not less than 2 h.

3) Except as permitted by Sentence (4), the required fire-resistance rating of a firewall, except for closures, shall be provided by masonry or concrete.

4) A firewall permitted to have a fire-resistance rating not more than 2 h need not be constructed of masonry or concrete, provided
   a) the assembly providing the fire-resistance rating is protected against damage that would compromise the integrity of the assembly, and
   b) the design conforms to Article 4.1.5.17.
(See Note A-3.1.10.2.(4).)

3.1.10.3. Continuity of Firewalls

1) A firewall shall extend from the ground continuously through, or adjacent to, all storeys of a building or buildings so separated, except that a firewall located above a basement storage garage conforming to Article 3.2.1.2. is permitted to commence at the floor assembly immediately above the storage garage. (See also Sentence 3.1.10.1.(3).)
2) A firewall is permitted to terminate on the underside of a reinforced concrete roof slab, provided
a) the roof slab on both sides of the firewall has a fire-resistance rating not less than
   i) 1 h if the firewall is required to have a fire-resistance rating not less than 2 h, or
   ii) 2 h if the firewall is required to have a fire-resistance rating not less than 4 h, and
b) there are no concealed spaces within the roof slab in that portion immediately above the firewall.

3.1.10.4. Parapets

   1) Except as permitted by Sentences (2) and 3.1.10.3.(2), a firewall shall extend above the roof surface to form a parapet not less than
      a) 150 mm high for a firewall required to have a fire-resistance rating not less than 2 h, and
      b) 900 mm high for a firewall required to have a fire-resistance rating not less than 4 h.

   2) A firewall that separates 2 buildings with roofs at different elevations need not extend above the upper roof surface to form a parapet, provided the difference in elevation between the roofs is more than 3 m.

3.1.10.5. Maximum Openings

   1) Openings in a firewall shall conform to the size limits described in Article 3.1.8.6. and the aggregate width of openings shall be not more than 25% of the entire length of the firewall.

3.1.10.6. Exposure Protection for Adjacent Walls

   1) The requirements of Article 3.2.3.14. shall apply to the external walls of 2 buildings that meet at a firewall at an angle less than 135°.

3.1.10.7. Combustible Projections

   1) Combustible material shall not extend across the end of a firewall but is permitted to extend across a roof above a firewall that is terminated in conformance with Sentence 3.1.10.3.(2).

   2) If buildings are separated by a firewall, combustible projections on the exterior of one building, including balconies, platforms, canopies, eave projections and stairs, that extend outward beyond the end of the firewall, shall not be permitted within 2.4 m of combustible projections and window or door openings of the adjacent building. (See also Article 3.2.3.6.)

3.1.11. Fire Blocks in Concealed Spaces

3.1.11.1. Separation of Concealed Spaces

   1) Concealed spaces in interior wall, ceiling and crawl spaces shall be separated from concealed spaces in exterior walls and attic or roof spaces by fire blocks conforming to Article 3.1.11.7.

3.1.11.2. Fire Blocks in Wall Assemblies

   1) Except as permitted by Sentence (2), fire blocks conforming to Article 3.1.11.7. shall be provided to block off concealed spaces within a wall assembly
      a) at every floor level,
      b) at every ceiling level where the ceiling forms part of an assembly required to have a fire-resistance rating, and
      c) so that the maximum horizontal dimension is not more than 20 m and the maximum vertical dimension is not more than 3 m.

   2) Fire blocks conforming to Sentence (1) are not required, provided
      a) the wall space is filled with insulation,
      b) the exposed construction materials and any insulation within the wall space are noncombustible,
      c) the exposed materials within the space, including insulation but not including wiring, piping or similar services, have a flame-spread rating not more than 25 on any exposed surface, or on any surface that would be
exposed by cutting through the material in any direction, and fire blocks are installed so that the vertical distance between them is not more than 10 m, or
d) the insulated wall assembly contains not more than one concealed air space, and the horizontal thickness of that air space is not more than 25 mm.

3.1.11.3. **Fire Blocks between Nailing and Supporting Elements**

1) In a building required to be of noncombustible construction, a concealed space in which there is an exposed ceiling finish with a flame-spread rating more than 25 shall be provided with fire blocks conforming to Article 3.1.11.7. between wood nailing elements so that the maximum area of the concealed space is not more than 2 m².

2) In a building required to be of noncombustible construction, fire blocks conforming to Article 3.1.11.7. shall be provided in the concealed spaces created by the wood members permitted by Sentence 3.1.5.10.(2) so that the maximum area of a concealed space is not more than 10 m².

3.1.11.4. **Fire Blocks between Vertical and Horizontal Spaces**

1) Fire blocks conforming to Article 3.1.11.7. shall be provided
   a) at all interconnections between concealed vertical and horizontal spaces in interior coved ceilings, drop ceilings and soffits in which the exposed construction materials within the space have a flame-spread rating more than 25, and
   b) at the end of each run and at each floor level in concealed spaces between stair stringers in which the exposed construction materials within the space have a flame-spread rating more than 25.

3.1.11.5. **Fire Blocks in Horizontal Concealed Spaces**

1) Except for crawl spaces conforming to Sentence 3.1.11.6.(1) and as required in Sentence (3), horizontal concealed spaces within a floor assembly or roof assembly of combustible construction, in which sprinklers are not installed, shall be separated by construction conforming to Article 3.1.11.7. into compartments
   a) not more than 600 m² in area with no dimension more than 60 m if the exposed construction materials within the space have a flame-spread rating not more than 25, and
   b) not more than 300 m² in area with no dimension more than 20 m if the exposed construction materials within the space have a flame-spread rating more than 25.

(See Note A-3.1.11.5.(1).)

2) A concealed space in an exterior cornice, a mansard-style roof, a balcony or a canopy in which exposed construction materials within the space have a flame-spread rating more than 25, shall be separated by construction conforming to Article 3.1.11.7.
   a) at locations where the concealed space extends across the ends of required vertical fire separations, and
   b) so that the maximum dimension in the concealed space is not more than 20 m.

3) Except as provided in Sentence (4), in buildings or parts thereof conforming to Article 3.2.2.50. or 3.2.2.58., horizontal concealed spaces within a floor assembly or roof assembly of combustible construction shall be separated by construction conforming to Article 3.1.11.7. into compartments that are
   a) not more than 600 m² in area with no dimension more than 60 m, if the exposed construction materials within the space have a flame-spread rating not more than 25, and
   b) not more than 300 m² in area with no dimension more than 20 m, if the exposed construction materials within the space have a flame-spread rating more than 25.

(See Note A-3.1.11.5.(3).)

4) Fire blocks conforming to Sentence (3) are not required where the horizontal concealed space within the floor or roof assembly is entirely filled with noncombustible insulation such that any air gap between the top of the insulation and the floor or roof deck does not exceed 50 mm.

Effective December 10, 2018 to December 11, 2019
3.1.11.6. Fire Blocks in Crawl Spaces

1) A crawl space that is not considered as a basement by Article 3.2.2.9. and in which sprinklers are not installed, shall be separated by construction conforming to Article 3.1.11.7. into compartments not more than 600 m² in area with no dimension more than 30 m.

3.1.11.7. Fire Block Materials

1) Except as permitted by Sentences (2) to (4) and (7), fire blocks shall remain in place and prevent the passage of flames for not less than 15 min when subjected to the standard fire exposure in CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials.”

2) Gypsum board not less than 12.7 mm thick and sheet steel not less than 0.38 mm thick need not be tested in conformance with Sentence (1), provided all joints have continuous support.

3) In a building required to be of noncombustible construction, wood nailing elements described in Article 3.1.5.8. need not be tested in conformance with Sentence (1).

4) In a building permitted to be of combustible construction, in a combustible roof system permitted by Sentence 3.1.5.3.(2), and in a raised platform permitted by Sentence 3.1.5.10.(2), fire blocks are permitted to be:
   a) solid lumber or a structural composite lumber product conforming to ASTM D 5456, “Evaluation of Structural Composite Lumber Products,” not less than 38 mm thick,
   b) phenolic bonded plywood, waferboard, or oriented strandboard not less than 12.5 mm thick with joints supported, or
   c) two thicknesses of lumber or a structural composite lumber product conforming to ASTM D 5456, “Evaluation of Structural Composite Lumber Products,” each not less than 19 mm thick with joints staggered, where the width or height of the concealed space requires more than one piece of lumber or structural composite lumber product not less than 38 mm thick to block off the space.

5) Openings through materials referred to in Sentences (1) to (4) shall be protected to maintain the integrity of the construction.

6) Where materials referred to in Sentences (1) to (4) are penetrated by construction elements or by service equipment, a fire stop shall be used to seal the penetration. (See Note A-3.1.11.7.(6).)

7) In building permitted to be of combustible construction, semi-rigid fibre insulation board produced from glass, rock or slag is permitted to be used to block the vertical space in a double stud wall assembly formed at the intersection of the floor assembly and the walls, provided the width of the vertical space does not exceed 25 mm and the insulation board
   a) has a density not less than 45 kg/m³,
   b) is securely fastened to one set of studs,
   c) extends from below the bottom of the top plates in the lower storey to above the top of the bottom plate in the upper storey, and
   d) completely fills the portion of the vertical space between the headers and between the wall plates.
(See Note A-3.1.11.7.(7).)

3.1.12. Flame-Spread Rating and Smoke Developed Classification

3.1.12.1. Determination of Ratings

1) Except as required by Sentence (2) and as permitted by Sentence (3), the flame-spread rating and smoke developed classification of a material, assembly, or structural member shall be determined on the basis of not less than three tests conducted in conformance with CAN/ULC-S102, “Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.”

2) The flame-spread rating and smoke developed classification of a material or assembly shall be determined on the basis of not less than three tests conducted in conformance with CAN/ULC-S102.2, “Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies,” if the material or assembly
   a) is designed for use in a relatively horizontal position with only its top surface exposed to air,
3.1.13. Interior Finish

3.1.13.1. Interior Finishes, Furnishings and Decorative Materials

1) Except as otherwise provided by this Subsection, interior finishes, furnishings and decorative materials shall conform to Section 2.3. of Division B of the British Columbia Fire Code.

2) Interior finish material shall include any material that forms part of the interior surface of a floor, wall, partition or ceiling, including:
   a) interior cladding of plaster, wood or tile,
   b) surfacing of fabric, paint, plastic, veneer or wallpaper,
   c) doors, windows and trim,
   d) lighting elements such as light diffusers and lenses forming part of the finished surface of the ceiling, and
   e) carpet material that overlies a floor that is not intended as the finished floor.

3.1.13.2. Flame-Spread Rating

1) Except as otherwise required or permitted by this Subsection, the flame-spread rating of interior wall and ceiling finishes, including glazing and skylights, shall be not more than 150 and shall conform to Table 3.1.13.2.

   Table 3.1.13.2. Flame-Spread Ratings
   Forming Part of Sentence 3.1.13.2.(1)

<table>
<thead>
<tr>
<th>Occupancy, Location or Element</th>
<th>Maximum Flame-Spread Rating for Walls and Ceilings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sprinklered</td>
</tr>
<tr>
<td>Group A, Division 1 occupancies, including doors, skylights, glazing and light diffusers and lenses</td>
<td>150</td>
</tr>
<tr>
<td>Group B occupancies</td>
<td>150</td>
</tr>
<tr>
<td>Exits$^{(1)}$</td>
<td>25</td>
</tr>
<tr>
<td>Lobbies described in Sentence 3.4.4.2.(2)</td>
<td>25</td>
</tr>
<tr>
<td>Covered vehicular passageways, except for roof assemblies of heavy timber construction in the passageways</td>
<td>25</td>
</tr>
<tr>
<td>Vertical service spaces</td>
<td>25</td>
</tr>
</tbody>
</table>

Notes to Table 3.1.13.2.:
(1) See Articles 3.1.13.8. and 3.1.13.10.

2) Except as permitted by Sentence (3), doors, other than those in Group A, Division 1 occupancies, need not conform to Sentence (1) provided they have a flame-spread rating not more than 200. (See Note A-3.1.13.2.(2).)

3) Doors within a dwelling unit need not conform to Sentences (1) and (2).

4) Up to 10% of the total wall area and 10% of the total ceiling area of a wall or ceiling finish that is required by Sentence (1) to have a flame-spread rating less than 150 is permitted to have a flame-spread rating not more than 150, except that up to 25% of the total wall area of lobbies described in Sentence 3.4.4.2.(2) is permitted to have a flame-spread rating not more than 150.

5) Except in the case of Group A, Division 1 occupancies, combustible doors, skylights, glazing and light diffusers and lenses shall not be considered in the calculation of wall and ceiling areas described in Sentence (4).
3.1.13.3. **Bathrooms in Residential Suites**

1) The flame-spread rating of interior wall and ceiling finishes for a bathroom within a suite of residential occupancy shall be not more than 200.

3.1.13.4. **Light Diffusers and Lenses**

1) The flame-spread rating of combustible light diffusers and lenses in all occupancies other than Group A, Division 1 is permitted to be more than the flame-spread rating limits required elsewhere in this Subsection, provided the light diffusers and lenses
   a) have a flame-spread rating not more than 250 and a smoke developed classification not more than 600 when tested in conformance with CAN/ULC-S102.2, “Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies,”
   b) fall to the bottom of the test apparatus before igniting when tested in conformance with CAN/ULC-S102.3, “Fire Test of Light Diffusers and Lenses,”
   c) are not prevented from falling from the ceiling by construction located beneath the elements, and
   d) are not used in a corridor that is required to be separated from the remainder of the building by a fire separation or in an exit shaft unless individual diffusers or lenses are not more than 1 m² in area and are not less than 1.2 m apart.

3.1.13.5. **Skylights**

1) Individual combustible skylights in a corridor that is required to be separated from the remainder of the building by a fire separation shall be not more than 1 m² in area and not less than 1.2 m apart.

3.1.13.6. **Corridors**

1) Except as permitted by Sentences (2) and (3), the flame-spread rating shall be not more than 75 for the interior wall finish of
   a) a public corridor,
   b) a corridor used by the public in an assembly occupancy, or
   c) a corridor serving classrooms.

2) The flame-spread rating for corridors specified in Sentence (1) is permitted to be waived, provided the flame-spread rating is not more than
   a) 25 on the upper half of the wall, and
   b) 150 on the lower half of the wall.

3) Where the floor area is sprinklered throughout, the flame-spread ratings for corridors specified in Sentences (1) and (2) shall be not more than 150.

4) The flame-spread ratings specified in Sentences (1), (2) and (3) apply to occupancies in the corridor as well as to the corridor itself.

5) Except as provided in Sentence (6), the interior ceiling finish of corridors and occupancies referred to in Sentences (1) and (4) shall have a flame-spread rating not more than 25.

6) Where the floor area is sprinklered throughout, the flame-spread rating of the interior ceiling finish of corridors and occupancies referred to in Sentences (1) and (4) shall be not more than 150.

3.1.13.7. **High Buildings**

1) Except as permitted by Sentences (2) to (4), the interior wall, ceiling and floor finishes in a building regulated by the provisions of Subsection 3.2.6. shall conform to the flame-spread rating requirements in Articles 3.1.13.2. and 3.1.13.11. and to the flame-spread rating and smoke developed classification values in Table 3.1.13.7.
Table 3.1.13.7.
Flame-Spread Rating and Smoke Developed Classification in High Buildings
Forming Part of Sentence 3.1.13.7.(1)

<table>
<thead>
<tr>
<th>Location or Element</th>
<th>Maximum Flame-Spread Rating</th>
<th>Maximum Smoke Developed Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wall Surface</td>
<td>Ceiling Surface</td>
</tr>
<tr>
<td>Exit stairways, vestibules to exit stairs and lobbies described in Sentence 3.4.4.2.(2)</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Corridors not within suites</td>
<td>(2)</td>
<td>(2)</td>
</tr>
<tr>
<td>Elevator cars</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>Elevator vestibules</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Service spaces and service rooms</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Other locations and elements</td>
<td>(2)</td>
<td>(2)</td>
</tr>
</tbody>
</table>

Notes to Table 3.1.13.7.:
(1) See Article 3.1.13.4. for lighting elements.
(2) Other requirements of this Part apply.

2) Except for a building of Group B major occupancy and elevator cars, the flame-spread rating and smoke developed classification of interior wall, floor and ceiling finishes need not conform to the values in Table 3.1.13.7., provided the building is sprinklered.

3) Trim and millwork in an exit stairway, a vestibule to an exit stairway, a lobby described in Sentence 3.4.4.2.(2), or a corridor not within a suite need not conform to the flame-spread rating and smoke developed classification requirements of Sentence (1) provided they have
   a) a flame-spread rating not more than 150,
   b) a smoke developed classification not more than 300, and
   c) an aggregate area not more than 10% of the area of the wall or ceiling on which they occur.

4) A door serving an exit stairway, a vestibule to an exit stairway, a lobby described in Sentence 3.4.4.2.(2), or a corridor not within a suite need not conform to the flame-spread rating and smoke developed classification requirements of Sentence (1) provided
   a) it has a flame-spread rating not more than 200,
   b) it has a smoke developed classification not more than 300, and
   c) the aggregate area of all doors is not more than 10% of the area of the wall in which they are located.

3.1.13.8. Noncombustible Construction

1) In a building required to be of noncombustible construction,
   a) the flame-spread ratings required by Subsection 3.1.5. shall apply in addition to the requirements in this Subsection, and
   b) the flame-spread ratings for exits in this Subsection shall also apply to any surface in the exit that would be exposed by cutting through the material in any direction, except that this requirement does not apply to doors, heavy timber construction in a sprinklered building and fire-retardant-treated wood.

3.1.13.9. Underground Walkways

1) Except for paint, the interior wall and ceiling finishes of an underground walkway shall be of noncombustible materials.
3.1.13.10. Exterior Exit Passageway

1) The wall and ceiling finishes of an exterior exit passageway that provides the only means of egress from the rooms or suites it serves, including the soffit beneath and the guard on the passageway, shall have a flame-spread rating not more than 25, except that a flame-spread rating not more than 150 is permitted for up to 10% of the total wall area and for up to 10% of the total ceiling area.

3.1.13.11. Elevator Cars

1) The wall and ceiling surfaces of elevator cars shall have a flame-spread rating not more than 75.

2) The wall, ceiling and floor surfaces of elevator cars shall have a smoke developed classification not more than 450.

3.1.14. Roof Assemblies

3.1.14.1. Fire-Retardant-Treated Wood Roof Systems

1) If a fire-retardant-treated wood roof system is used to comply with the requirements of Subsection 3.2.2., the roof deck assembly shall meet the conditions of acceptance of CAN/ULC-S126, “Test for Fire Spread Under Roof-Deck Assemblies.”

2) Supports for the roof deck assembly referred to in Sentence (1) shall consist of
   a) fire-retardant-treated wood,
   b) heavy timber construction,
   c) noncombustible construction, or
   d) a combination thereof.

3.1.14.2. Metal Roof Deck Assemblies

1) Except as permitted by Sentence (2), a metal roof deck assembly shall meet the conditions of acceptance of CAN/ULC-S126, “Test for Fire Spread Under Roof-Deck Assemblies,” if
   a) it supports a combustible material above the deck that could propagate a fire beneath the roof deck assembly, and
   b) the deck is used to comply with the requirements of Sentences 3.2.2.25.(2), 3.2.2.32.(2), 3.2.2.60.(2), 3.2.2.66.(2), 3.2.2.76.(2) and 3.2.2.83.(2) for noncombustible construction.

2) The requirements of Sentence (1) are waived provided
   a) the combustible material above the roof deck is protected by not less than 12.7 mm thick gypsum board, mechanically fastened to a supporting assembly if located beneath the roof deck, or by a thermal barrier conforming to one of Clauses 3.1.5.15.(2)(c) to (e) that is located
      i) on the underside of the combustible material, or
      ii) beneath the roof deck,
   b) the building is sprinklered throughout, or
   c) the roof assembly has a fire-resistance rating not less than 45 min.

3.1.15. Roof Covering

3.1.15.1. Roof Covering Classification

1) A roof covering classification shall be determined in conformance with CAN/ULC-S107, “Fire Tests of Roof Coverings.”

3.1.15.2. Roof Coverings

1) Except as provided in Sentences (2) and (3), every roof covering shall have a Class A, B or C classification as determined in accordance with Article 3.1.15.1.
2) A roof covering is not required to have a Class A, B or C classification for
   a) a tent,
   b) an air-supported structure,
   c) a building of Group A, Division 2 occupancy not more than 2 storeys in building height and not more than 1 000 m² in building area provided the roof covering is underlaid with noncombustible material, or
   d) a steel building system referred to in Article 4.3.4.3., provided the roof covering consists of brick, masonry, concrete, metal sheets or metal shingles.

3) Except as provided in Sentence (4), roof coverings on buildings conforming to Article 3.2.2.50. or 3.2.2.58. shall have a Class A classification where the roof height is greater than 25 m measured from the floor of the first storey to the highest point of the roof.

4) Where buildings conforming to Article 3.2.2.50. or 3.2.2.58. include non-contiguous roof assemblies at different elevations, the roof coverings referred to in Sentence (3) are permitted to be evaluated separately to determine the roof covering classification required.

3.1.16. Fabrics

3.1.16.1. Fabric Canopies and Marquees

1) Fabrics used as part of an awning, canopy or marquee that is located within or attached to a building of any type of construction shall conform to CAN/ULC-S109, “Flame Tests of Flame-Resistant Fabrics and Films.”

3.1.17. Occupant Load

3.1.17.1. Occupant Load Determination

1) The occupant load of a floor area or part of a floor area shall be based on
   a) the number of seats in an assembly occupancy having fixed seats,
   b) 2 persons per sleeping room in a dwelling unit, or
   c) the number of persons for which the area is designed, but not less than that determined from Table 3.1.17.1. for occupancies other than those described in Clauses (a) and (b), unless it can be shown that the area will be occupied by fewer persons.

2) If a floor area or part thereof has been designed for an occupant load other than that determined from Table 3.1.17.1., a permanent sign indicating that occupant load shall be posted in a conspicuous location.

<table>
<thead>
<tr>
<th>Type of Use of Floor Area or Part Thereof</th>
<th>Area per person, m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assembly uses</td>
<td></td>
</tr>
<tr>
<td>space with fixed seats</td>
<td>(1)</td>
</tr>
<tr>
<td>space with non-fixed seats</td>
<td>0.75</td>
</tr>
<tr>
<td>stages for theatrical performances</td>
<td>0.75</td>
</tr>
<tr>
<td>space with non-fixed seats and tables</td>
<td>0.95</td>
</tr>
<tr>
<td>standing space</td>
<td>0.40</td>
</tr>
<tr>
<td>stadia and grandstands</td>
<td>0.60</td>
</tr>
<tr>
<td>bowling alleys, pool and billiard rooms</td>
<td>9.30</td>
</tr>
<tr>
<td>classrooms</td>
<td>1.85</td>
</tr>
<tr>
<td>school shops and vocational rooms</td>
<td>9.30</td>
</tr>
<tr>
<td>reading or writing rooms or lounges</td>
<td>1.85</td>
</tr>
</tbody>
</table>
### Table 3.1.17.1. (continued)
#### Occupant Load
Forming Part of Article 3.1.17.1.

<table>
<thead>
<tr>
<th>Type of Use of Floor Area or Part Thereof</th>
<th>Area per person, m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>dining, beverage and cafeteria space</td>
<td>1.20</td>
</tr>
<tr>
<td>laboratories in schools</td>
<td>4.60</td>
</tr>
<tr>
<td><strong>Care, treatment or detention uses</strong></td>
<td></td>
</tr>
<tr>
<td>suites</td>
<td>(2)</td>
</tr>
<tr>
<td>care, treatment and sleeping room areas</td>
<td>10.00</td>
</tr>
<tr>
<td>detention quarters</td>
<td>11.60</td>
</tr>
<tr>
<td><strong>Residential uses</strong></td>
<td></td>
</tr>
<tr>
<td>dwelling units</td>
<td>(2)</td>
</tr>
<tr>
<td>dormitories</td>
<td>4.60</td>
</tr>
<tr>
<td><strong>Business and personal services uses</strong></td>
<td></td>
</tr>
<tr>
<td>personal services shops</td>
<td>4.60</td>
</tr>
<tr>
<td>offices</td>
<td>9.30</td>
</tr>
<tr>
<td><strong>Mercantile uses</strong></td>
<td></td>
</tr>
<tr>
<td><em>basements and first storeys</em></td>
<td>3.70</td>
</tr>
<tr>
<td>second storeys having a principal entrance from a pedestrian thoroughfare or a parking area</td>
<td>3.70</td>
</tr>
<tr>
<td>other storeys</td>
<td>5.60</td>
</tr>
<tr>
<td><strong>Industrial uses</strong></td>
<td></td>
</tr>
<tr>
<td>manufacturing or process rooms</td>
<td>4.60</td>
</tr>
<tr>
<td><em>storage garages</em></td>
<td>46.00</td>
</tr>
<tr>
<td>storage spaces (warehouse)</td>
<td>28.00</td>
</tr>
<tr>
<td>aircraft hangars</td>
<td>46.00</td>
</tr>
<tr>
<td><strong>Other uses</strong></td>
<td></td>
</tr>
<tr>
<td>cleaning and repair goods</td>
<td>4.60</td>
</tr>
<tr>
<td>kitchens</td>
<td>9.30</td>
</tr>
<tr>
<td><em>storage</em></td>
<td>46.00</td>
</tr>
<tr>
<td><em>public corridors intended for occupancies in addition to pedestrian travel</em></td>
<td>3.70(3)</td>
</tr>
</tbody>
</table>

#### Notes to Table 3.1.17.1.:
1. See Clause 3.1.17.1.(1)(a).
2. See Clause 3.1.17.1.(1)(b) (apply values for dwelling units to suites of care occupancy).
3. See Note A-3.3.

3) For the purposes of this Article, *mezzanines*, tiers and balconies shall be regarded as part of the *floor area*.
4) If a room or group of rooms is intended for different *occupancies* at different times, the value to be used from Table 3.1.17.1. shall be the value which gives the greatest number of persons for the *occupancies* concerned.