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January 12, 2015

**TO: BUILDING CODE USERS**

**RE: ERRATA PAGES TO THE 2012 BUILDING CODE COMPENDIUM EDITION**

The enclosed errata pages to the 2012 Building Code Compendium edition are identified by the notation "Errata Issued January 12, 2015" at the bottom of the page below the page number.

These replacement pages should be inserted in your Building Code following the insertion of the January 1, 2015 update amendment package issued October 24, 2014.



# Part 1

## Compliance and General

### Section 1.1. Organization and Application

#### 1.1.1. Organization of this Code

##### 1.1.1.1. Scope of Division A

(1) Division A contains compliance and application provisions and the *objectives* and *functional statements* of this Code.

##### 1.1.1.2. Scope of Division B

(1) Division B contains the *acceptable solutions* of this Code.

##### 1.1.1.3. Scope of Division C

(1) Division C contains the administrative provisions of this Code.

##### 1.1.1.4. Internal Cross-References

(1) If a provision of this Code contains a reference to another provision of this Code but no Division is specified, both provisions are in the same Division of this Code.

#### 1.1.2. Application of Division B (See Appendix A.)

##### 1.1.2.1. Application of Parts 1, 7 and 12

r<sub>5</sub> (1) Part 1 of Division B applies to all *buildings*.

r<sub>5</sub> (2) Subject to Article 1.1.2.6., Parts 7 and 12 of Division B apply to all *buildings*.

##### 1.1.2.2. Application of Parts 3, 4, 5 and 6

(1) Subject to Articles 1.1.2.6. and 1.3.1.2., Parts 3, 5 and 6 of Division B apply to all *buildings*,

(a) used for *major occupancies* classified as,

(i) Group A, *assembly occupancies*,

r<sub>1</sub> (ii) Group B, *care, care and treatment or detention occupancies*, or

(iii) Group F, Division 1, *high hazard industrial occupancies*, or

(b) exceeding 600 m<sup>2</sup> in *building area* or exceeding three *storeys* in *building height* and used for *major occupancies* classified as,

(i) Group C, *residential occupancies*,

(ii) Group D, *business and personal services occupancies*,

(iii) Group E, *mercantile occupancies*, or

(iv) Group F, Divisions 2 and 3, *medium hazard industrial occupancies* and *low hazard industrial occupancies*.

- (2) Subject to Articles 1.1.2.6. and 1.3.1.2., Part 4 of Division B applies to,
  - (a) *post-disaster buildings*,
  - (b) *buildings* described in Sentence (1),
  - (c) a retaining wall exceeding 1 000 mm in exposed height adjacent to,
    - (i) public property,
    - (ii) access to a *building*, or
    - (iii) private property to which the public is admitted,
  - (d) a pedestrian bridge appurtenant to a *building*,
  - (e) a crane runway,
  - (f) an exterior storage tank and its supporting structure that is not regulated by the *Technical Standards and Safety Act, 2000*,
  - (g) signs regulated by Section 3.15. of Division B that are not structurally supported by a *building*,
  - (h) a structure that supports a wind turbine generator having a rated output of more than 3 kW,
  - (i) an *outdoor pool* that has a water depth greater than 3.5 m at any point, and
  - (j) a *permanent solid nutrient storage facility* with supporting walls exceeding 1 000 mm in exposed height.
- (3) Section 3.11. of Division B applies to *public pools*.
- (4) Section 3.12. of Division B applies to *public spas*.
- (5) Section 3.15. of Division B applies to signs.

### 1.1.2.3. Application of Part 8

- r5 (1) Subject to Article 1.1.2.6., Part 8 of Division B applies to the design, *construction*, operation and maintenance of all *sewage systems* and to the *construction of buildings* in the vicinity of *sewage systems*.

### 1.1.2.4. Application of Part 9

- (1) Subject to Articles 1.1.2.6. and 1.3.1.2., Part 9 of Division B applies to all *buildings*,
  - (a) of three or fewer *storeys* in *building height*,
  - (b) having a *building area* not exceeding 600 m<sup>2</sup>, and
  - (c) used for *major occupancies* classified as,
    - (i) Group C, *residential occupancies*,
    - (ii) Group D, *business and personal services occupancies*,
    - (iii) Group E, *mercantile occupancies*, or
    - (iv) Group F, Divisions 2 and 3, *medium hazard industrial occupancies* and *low hazard industrial occupancies*.

### 1.1.2.5. Application of Part 10

- (1) Part 10 of Division B applies to existing *buildings* requiring a permit under section 10 of the Act.

### 1.1.2.6. Application of Part 11

- (1) Except as provided in Sentence (2), Part 11 of Division B applies to the design and *construction* of existing *buildings*, or parts of existing *buildings*, that have been in existence for at least five years.
- (2) If a *building* has been in existence for at least five years but includes an addition that has been in existence for less than five years, Part 11 of Division B applies to the entire *building*.

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**Table 1.3.1.2. (Cont'd)**  
**Documents Referenced in the Building Code**  
**Forming Part of Sentence 1.3.1.2.(1)**

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
ASME	B16.29-2007	Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV	7.2.7.5.(1)
ASME	B18.6.1-1981	Wood Screws (Inch Series)	Table 5.10.1.1. 9.23.3.1.(3)
ASME/CSA	ASME A17.1-2010 / CSA B44-10	Safety Code for Elevators and Escalators	3.5.2.2.(1) Table 4.1.5.11. 7.4.3.6.(1)
ASME/CSA	ASME A112.18.1-2012 / CSA B125.1-12	Plumbing Supply Fittings	7.2.10.6.(1) 7.6.5.2.(1)
ASME/CSA	ASME A112.18.2-2011 / CSA B125.2-11	Plumbing Waste Fittings	7.2.3.3.(1) 7.2.10.6.(2)
ASME/CSA	ASME A112.19.1-2008 / CSA B45.2-08	Enamelled Cast Iron and Enamelled Steel Plumbing Fixtures	7.2.2.2.(3) 7.2.2.2.(4)
ASME/CSA	ASME A112.19.2-2008 / CSA B45.1-08	Ceramic Plumbing Fixtures	7.2.2.2.(2)
ASME/CSA	ASME A112.19.3-2008 / CSA B45.4-08	Stainless Steel Plumbing Fixtures	7.2.2.2.(5)
ASME/CSA	ASME A112.19.7-2012 / CSA B45.10-12	Hydromassage Bathtub Systems	7.2.2.2.(7)
ASPE	2005	Data Books	7.6.3.1.(2) 7.7.4.1.(1)
ASSE	ANSI/ASSE 1010-2004	Water Hammer Arresters	7.2.10.15.(1)
ASSE	1051-2009	Individual and Branch Type Air Admittance Valves for Sanitary Drainage Systems	7.2.10.16.(1)
ASTM	A53 / A53M-10	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless	7.2.6.7.(4)
ASTM	A123 / A123M-09	Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products	Table 5.10.1.1. Table 9.20.16.1.
ASTM	A153 / A153M-09	Zinc Coating (Hot-Dip) on Iron and Steel Hardware	Table 5.10.1.1. Table 9.20.16.1.
ASTM	A252-10	Welded and Seamless Steel Pipe Piles	4.2.3.8.(1)
ASTM	A283 / A283M-03	Low and Intermediate Tensile Strength Carbon Steel Plates	4.2.3.8.(1)
ASTM	A518 / A518M-99	Corrosion-Resistant High-Silicon Iron Castings	7.2.8.1.(1)
ASTM	A653 / A653M-11	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process	Table 5.10.1.1. 9.3.3.2.(1)
ASTM	A792 / A792M-10	Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process	9.3.3.2.(1)
ASTM	A1008 / A1008M-11	Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable	4.2.3.8.(1)
ASTM	A1011 / A1011M-10	Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength	4.2.3.8.(1)
ASTM	B32-08	Solder Metal	7.2.9.2.(2)
ASTM	B42-10	Seamless Copper Pipe, Standard Sizes	7.2.7.1.(1)
ASTM	B43-09	Seamless Red Brass Pipe, Standard Sizes	7.2.7.1.(2)
Column 1	2	3	4

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Table 1.3.1.2. (Cont'd)  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
ASTM	B68 / B68M-11	Seamless Copper Tube, Bright Annealed	7.2.7.4.(3)
ASTM	B88-09	Seamless Copper Water Tube	7.2.7.4.(1) 7.2.7.4.(3) Table 7.2.11.2.
ASTM	B306-09	Copper Drainage Tube (DWV)	7.2.7.4.(1)
ASTM	B813-10	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube	7.2.9.2.(3)
ASTM	B828-02	Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings	7.3.2.4.(1)
ASTM	C4-04	Clay Drain Tile and Perforated Clay Drain Tile	Table 5.10.1.1. 9.14.3.1.(1)
ASTM	C27-98	Classification for Fire Clay and High-Alumina Refractory Brick	9.21.3.4.(1)
ASTM	C73-10	Calcium Silicate Brick (Sand-Lime Brick)	Table 5.10.1.1. 9.20.2.1.(1)
ASTM	C126-11	Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units	Table 5.10.1.1. 9.20.2.1.(1)
ASTM	C212-10	Structural Clay Facing Tile	Table 5.10.1.1. 9.20.2.1.(1)
ASTM	C260 / C260M-10a	Air-Entraining Admixtures for Concrete	9.3.1.8.(1)
ASTM	C411-11	Hot-Surface Performance of High-Temperature Thermal Insulation	6.2.3.4.(3) 6.2.9.2.(2)
ASTM	C412M-11	Concrete Drain Tile (Metric)	Table 5.10.1.1. 9.14.3.1.(1)
ASTM	C444M-03	Perforated Concrete Pipe (Metric)	Table 5.10.1.1. 9.14.3.1.(1)
ASTM	C494 / C494M-11	Chemical Admixtures for Concrete	9.3.1.8.(1)
ASTM	C553-11	Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications	Table 5.10.1.1.
ASTM	C612-10	Mineral Fiber Block and Board Thermal Insulation	Table 5.10.1.1.
ASTM	C700-11	Vitrified Clay Pipe, Extra Strength, Standard Strength and Perforated	Table 5.10.1.1. 9.14.3.1.(1)
ASTM	C834-10	Latex Sealants	Table 5.10.1.1. 9.27.4.2.(2)
ASTM	C920-11	Elastomeric Joint Sealants	Table 5.10.1.1. 9.27.4.2.(2)
ASTM	C954-11	Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness	9.24.1.4.(1)
ASTM	C991-08e1	Flexible Fibrous Glass Insulation for Metal Buildings	Table 5.10.1.1.
ASTM	C1002-07	Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs	Table 5.10.1.1. 9.24.1.4.(1) 9.29.5.7.(1)
ASTM	C1053-00	Borosilicate Glass Pipe and Fittings for Drain, Waste and Vent (DWV) Applications	7.2.8.1.(1)
ASTM	C1177 / C1177M-08	Glass Mat Gypsum Substrate for Use as Sheathing	Table 5.10.1.1. Table 9.23.16.2.A.
Column 1	2	3	4

(4) In an *assembly occupancy* with fixed seats, the minimum number of spaces designated for wheelchair use and the minimum number of fixed seats designated for *adaptable seating* shall conform to Table 3.8.2.1. (See Appendix A.)

**Table 3.8.2.1.**  
**Designated Wheelchair Spaces and Adaptable Seating**  
 Forming Part of Sentence 3.8.2.1.(4)

Number of Fixed Seats in Seating Area	Minimum Number of Spaces Designated for Wheelchairs	Minimum Number of Fixed Seats Designated for <i>Adaptable Seating</i>
Up to 20	2	1
21 to 40	2	2
41 to 60	2	3
61 to 80	2	4
81 to 100	3	5
Over 100	3% of the seating capacity	The greater of 5 seats or 5% of the aisle seating capacity
Column 1	2	3

(5) In a Group C *major occupancy* apartment building, not less than 15% of all *suites* of *residential occupancy* shall be provided with a *barrier-free* path of travel from the *suite* entrance door into the following rooms and spaces that shall be located at the same level as the *barrier-free* path of travel:

- (a) at least one bedroom,
  - (b) at least one bathroom conforming to Sentence (6),
  - (c) a kitchen or kitchen space, and
  - (d) a living room or space.
- (See Appendix A.)

(6) Bathrooms required by Clause (5)(b) shall,

- (a) contain a lavatory,
  - (b) contain a water closet,
  - (c) contain a bathtub or a shower,
  - (d) have wall reinforcement installed in conformance with Sentence 3.3.4.9.(1), and
  - (e) be designed to permit a wheelchair to turn in an open space not less than 1 500 mm in diameter.
- (See Appendix A.)

(7) The number of *suites* described in Sentence (5) having 1, 2 or 3 or more bedrooms shall be in proportion to the number of *suites* of *residential occupancy* having 1, 2 or 3 or more bedrooms in the remainder of the *building*. (See Appendix A.)

(8) The *suites* described in Sentence (5) shall be distributed among *storeys* that are required by Article 3.8.2.1. to have a *barrier-free* path of travel, having regard to the height of the *suite* above *grade*.

### **3.8.2.2. Access to Parking Areas**

(1) A *barrier-free* path of travel shall be provided from the entrance described in Article 3.8.1.2. to,

- (a) an exterior parking area, where exterior parking is provided, and (See Appendix A.)
- (b) at least one parking level, where a passenger elevator serves an indoor parking level.

(2) The vehicular entrance to and egress from at least one parking level described in Sentence (1) and all areas intended to be used by wheelchair accessible vehicles to gain access to a parking space on that level shall have a vertical clearance of not less than 2 100 mm.

- r4 (3) If an exterior passenger loading zone is provided, it shall have,  
 r4 (a) an access aisle not less than 2 440 mm wide and 7 400 mm long adjacent and parallel to the vehicle pull-up space,  
 (b) a curb ramp, where there are curbs between the access aisle and the vehicle pull-up space, and  
 r4 (c) a clearance height of not less than 3 600 mm at the vehicle pull-up space and along the vehicle access and egress routes.

r4 **3.8.2.3. Washrooms Required to be Barrier-Free** (See Appendix A.)

- (1) A *barrier-free* path of travel shall be provided to *barrier-free* washrooms designed to accommodate persons with disabilities in conformance with the requirements in Articles 3.8.3.8. to 3.8.3.12.
- (2) The number of universal washrooms conforming to Article 3.8.3.12. provided in a *building* in which a washroom is required by Subsection 3.7.4. shall conform to Table 3.8.2.3.A. (See Appendix A.)

Table 3.8.2.3.A.  
 Minimum Number of Universal Washrooms per Building  
 Forming Part of Sentence 3.8.2.3.(2)

Number of <i>Storeys</i> in <i>Building</i>	Minimum Number of Universal Washrooms per <i>Building</i>
1 to 3	1
4 to 6	2
Over 6	3, plus 1 for each additional increment of 3 <i>storeys</i> in excess of 6 <i>storeys</i>
Column 1	2

- (3) Where a washroom required by Subsection 3.7.4. is provided in a *storey* that is required by Article 3.8.2.1. to have a *barrier-free* path of travel,
- (a) the washroom shall conform to Articles 3.8.3.8. to 3.8.3.11., and
- (b) the number of *barrier-free* water closet stalls provided in the washroom shall conform to Table 3.8.2.3.B. (See Appendix A.)
- (4) Except as permitted in Sentence (5), where washrooms in excess of those required by Subsection 3.7.4. are provided in a *storey* that is required by Article 3.8.2.1. to have a *barrier-free* path of travel, the additional washrooms shall be designed to accommodate persons with disabilities in conformance with the requirements of,
- (a) Articles 3.8.3.8. to 3.8.3.11., or
- (b) Article 3.8.3.12.
- (5) Washrooms need not conform to Sentence (4) provided,
- (a) they are located within *suites* of *residential occupancy*,
- (b) other *barrier-free* washrooms are provided on the same floor level within 45 m, or
- (c) they are located in an individual *suite* that is,
- (i) used for a *business and personal services occupancy*, a *mercantile occupancy* or an *industrial occupancy*,
- (ii) less than 300 m<sup>2</sup> in area, and
- (iii) completely separated from, and without access to, the remainder of the *building*. (See Appendix A.)
- (6) Where a washroom required by Subsection 3.7.4. is provided in a *storey* that is not required by Article 3.8.2.1. to have a *barrier-free* path of travel, the washroom shall,
- (a) conform to Article 3.8.3.9. and Sentences 3.8.3.10.(5) and 3.8.3.11.(5), and
- (b) be provided with at least one ambulatory water closet stall conforming to Sentence 3.8.3.8.(10). (See Appendix A.)



- (d) unless the bathtub is free-standing, a grab bar conforming to Sentence 3.8.3.8.(7) that is located at each end of the bathtub and is,
- r<sub>5</sub>
- (i) at least 750 mm long,
  - (ii) mounted vertically from a point 200 mm above the rim of the bathtub, and
  - (iii) mounted within 150 mm from the edge of the bathtub, measured horizontally.
- (See Appendix A.)

(5) Where a *barrier-free* bathtub is provided, a clear floor space at least 900 mm wide and 1 440 mm long shall be provided along the full length of the bathtub.

### 3.8.3.14. Reserved

r<sub>4</sub> **3.8.3.15. Shelves or Counters for Telephones** (See Appendix A.)

- (1) Where more than one telephone is provided for public use, a built-in shelf or counter shall be provided for at least one telephone.
- (2) A shelf or counter described in Sentence (1) shall,
  - (a) be level,
  - (b) be not less than 500 mm wide and 350 mm deep, and
  - (c) have, for each telephone provided, a clear space that,
    - (i) is not less than 810 mm wide and 1 370 mm deep, centred on the telephone, and
    - (ii) has no obstruction within 250 mm above the surface.
- (3) The top surface of a section of the shelf or counter described in Sentence (1) shall,
  - (a) be located not less than 775 mm and not more than 875 mm from the finished floor, and
  - (b) have a knee space not less than 740 mm high.
- (4) Where a wall-hung telephone is provided above the shelf or counter section described in Sentence (3), it shall be located so that the receiver and coin or card slot are not more than 1 200 mm from the finished floor.
- (5) Where more than one telephone is provided for public use in a normally occupied *floor area* that is not required by Article 3.8.2.1. to have a *barrier-free* path of travel, a built-in shelf or counter that conforms to Sentences (2), (3) and (4) shall be provided for at least one telephone.

r<sub>4</sub> **3.8.3.16. Drinking Fountains** (See Appendix A.)

- (1) Where more than one drinking fountain is provided, at least one shall be a *barrier-free* fountain that conforms to Sentences (2) and (3).
- (2) A *barrier-free* drinking fountain shall,
  - (a) have a spout located near the front of the unit not more than 915 mm above the finished floor,
  - (b) be equipped with controls that are easily operated from a wheelchair using one hand with a force of not more than 22 N or operates automatically,
  - (c) project the water at least 100 mm high,
  - (d) provide the water stream at a vertical angle of up to,
    - (i) 30°, where the spout is located less than 75 mm from the front of the fountain, or
    - (ii) 15°, where the spout is located not less than 75 mm and not more than 125 mm from the front of the fountain,
  - (e) be detectable by a cane at a level at or below 680 mm from the finished floor, and

- r<sub>5</sub> (f) where the drinking fountain is cantilevered, meet the following requirements:
- (i) be mounted not more than 915 mm above the finished floor,
  - (ii) provide a clearance height under the fountain of not less than 735 mm above the finished floor,
  - (iii) have a clear depth under the fountain of not less than 450 mm,
  - (iv) have a clear width under the fountain of not less than 760 mm,
  - (v) have a toe clearance height under the fountain of at least 350 mm above the finished floor from a point 300 mm back from the front edge to the wall, and
  - (vi) have a depth at the base of the fountain of at least 700 mm.

(3) A *barrier-free* drinking fountain required by Sentence (1) shall have a clear floor space in front of, or adjacent to, the fountain that is a minimum of 810 mm deep and 1 370 mm wide.

(4) Where more than one drinking fountain is provided in a normally occupied *floor area* that is not required by Article 3.8.2.1. to have a *barrier-free* path of travel, at least one shall be a *barrier-free* fountain that conforms to Sentences (2) and (3).

#### r<sub>4</sub> 3.8.3.17. Platforms

- (1) A tactile attention indicator conforming to Article 3.8.3.18. shall be installed along any edge of a platform that is,
  - (a) not protected by a *guard*, and
  - (b) higher than 250 mm above the finished floor or ground or sloped steeper than 1 in 3.
- (2) Sentence (1) does not apply to the front edges of *stages*.

#### r<sub>4</sub> 3.8.3.18. Tactile Attention Indicators

- r<sub>5</sub> (1) Where a tactile attention indicator is required, it shall conform to Sentence (2) and Clauses 4.1.1. and 4.1.2. of ISO 23599, “Assistive Products for Blind and Vision-Impaired Persons – Tactile Walking Surface Indicators”.
- r<sub>5</sub> (2) The depth of the tactile attention indicator shall be not less than 300 mm and not more than 610 mm.

(4) Where a fire alarm system is required in a *hotel*, *heat detectors* shall be installed in every room in a *suite* and in every room not located in a *suite* in a *floor area* containing a *hotel*, other than washrooms within a *suite*, saunas, refrigerated areas and swimming pools.

#### **9.10.18.5. Smoke Detectors in Recirculating Air Handling Systems**

(1) Except for a recirculating air system serving not more than one *dwelling unit*, where a fire alarm system is required to be installed, every recirculating air handling system shall be designed to prevent the circulation of smoke upon a signal from a duct-type *smoke detector* where such system supplies more than one *suite* on the same floor or serves more than 1 *storey*.

#### **9.10.18.6. Portions of Buildings Considered as Separate Buildings**

(1) Except as provided in Sentence (2), where a vertical *fire separation* having a *fire-resistance rating* of at least 1 h separates a portion of a *building* from the remainder of the *building* and there are no openings through the *fire separation* other than those for piping, tubing, wiring and conduit, the requirements for fire alarm and detection systems is permitted to be applied to each portion so separated as if it were a separate *building*.

(2) The permission in Sentence (1) to consider separated portions of a *building* as separate *buildings* does not apply to *service rooms* and storage rooms.

#### **9.10.18.7. Central Vacuum Systems**

(1) A central vacuum cleaning system serving more than one *suite* or *storey* in a *building* equipped with a fire alarm system shall be designed to shut down upon activation of the fire alarm system.

#### **9.10.18.8. Open-Air Storage Garages**

(1) Except as required in Article 9.10.18.1., a fire alarm system is not required in a *storage garage* conforming to Article 3.2.2.83. provided there are no other *occupancies* in the *building*.

#### **9.10.18.9. Fire Alarm System in a Hotel**

(1) If a fire alarm system is required in a *building* containing a *hotel*, a single stage fire alarm system shall be provided.

#### **9.10.18.10. Commissioning of Life Safety and Fire Protection Systems**

(1) Where life safety and fire protection systems are installed to comply with the provisions of this Code or the Fire Code made under the *Fire Protection and Prevention Act, 1997*, the commissioning of these integrated systems must be performed as a whole to ensure the proper operation and inter-relationship of the systems.

(2) Sentence (1) does not apply to a *building* that contains only *dwelling units* and has no *dwelling unit* above another *dwelling unit*.

### **9.10.19. Smoke Alarms**

#### **e<sub>3</sub> 9.10.19.1. Required Smoke Alarms** (See Appendix A.)

(1) *Smoke alarms* conforming to CAN/ULC-S531, “Smoke Alarms”, shall be installed in each *dwelling unit* and in each sleeping room not within a *dwelling unit*.

- r<sub>5</sub> (2) *Smoke alarms* required in Sentence (1) shall have a visual signalling component conforming to the requirements in 18.5.3. (Light, Color and Pulse Characteristics) of NFPA 72, “National Fire Alarm and Signaling Code”.
- r<sub>5</sub> (3) The visual signalling component required in Sentence (2) need not,
- be integrated with the *smoke alarm* provided it is interconnected to it,
  - be on battery backup, or
  - have synchronized flash rates, when installed in a *dwelling unit*.
- r<sub>5</sub> (4) The luminous intensity for visual signalling components required in Sentence (2) that are installed in sleeping rooms shall be a minimum of 175 cd.
- r<sub>5</sub> (5) *Smoke alarms* required in Sentence (1) shall be installed on or near the ceiling.

### 9.10.19.2. Sound Patterns of Smoke Alarms

- The sound patterns of *smoke alarms* shall,

  - meet the temporal patterns of *alarm signals*, or
  - be a combination of temporal pattern and voice relay.

### e<sub>3</sub> 9.10.19.3. Location of Smoke Alarms (See Appendix A.)

- Within *dwelling units*, sufficient *smoke alarms* shall be installed so that,

  - there is at least one *smoke alarm* installed on each *storey*, including *basements*, and
  - on any *storey* of a *dwelling unit* containing sleeping rooms, a *smoke alarm* is installed,
    - in each sleeping room, and
    - in a location between the sleeping rooms and the remainder of the *storey*, and if the sleeping rooms are served by a hallway, the *smoke alarm* shall be located in the hallway.

(See Appendix A.)

- A *smoke alarm* required in Sentence (1) shall be installed in conformance with CAN/ULC-S553, “Installation of Smoke Alarms”.

- r<sub>5</sub> (3) A *smoke alarm* required in Sentence (1) shall have a visual signalling component conforming to the requirements in 18.5.3. (Light, Color and Pulse Characteristics) of NFPA 72, “National Fire Alarm and Signaling Code”.
- r<sub>5</sub> (4) The visual signalling component required in Sentence (3) need not,
- be integrated with the *smoke alarm* provided it is interconnected to it,
  - be on battery backup, or
  - have synchronized flash rates, when installed in a *dwelling unit*.
- r<sub>5</sub> (5) The luminous intensity for visual signalling components required in Sentence (3) that are installed in sleeping rooms shall be a minimum of 175 cd.
- r<sub>5</sub> (6) *Smoke alarms* required in Sentence (1) shall be installed on or near the ceiling.

### 9.10.19.4. Power Supply

- Except as provided in Sentences (2) and (3), *smoke alarms* required in Sentence 9.10.19.1.(1) shall,
    - be installed with permanent connections to an electrical circuit,
    - have no disconnect switch between the overcurrent device and the *smoke alarm*, and
    - in case the regular power supply to the *smoke alarm* is interrupted, be provided with a battery as an alternative power source that can continue to provide power to the *smoke alarm* for a period of not less than 7 days in the normal condition, followed by 4 min of alarm.
- Where the *building* is not supplied with electrical power, *smoke alarms* are permitted to be battery operated.

**a2.1 A-3.8.3.15. Telephone Shelves or Counters.**

Built-in shelves or counters for public telephones must be designed to accommodate persons using text telephones (TT). These devices may also be referred to as teletypewriters (TT) or telecommunication devices for the deaf (TDD). These devices require a level surface at least 500 mm wide by 350 mm deep with no obstruction above that space within 250 mm. If a wall-hung telephone or other obstruction extends to less than 250 mm from the shelf or counter, an equivalent clear space must be provided on either side of each telephone.

At least one telephone should be equipped with a volume control on a receiver that generates a magnetic field compatible with the T-switch of a hearing aid. The lower portion of the shelf or counter is intended for persons using a wheelchair; therefore all parts of the operating mechanism of the telephone above this portion should be within the reach of a wheelchair user.

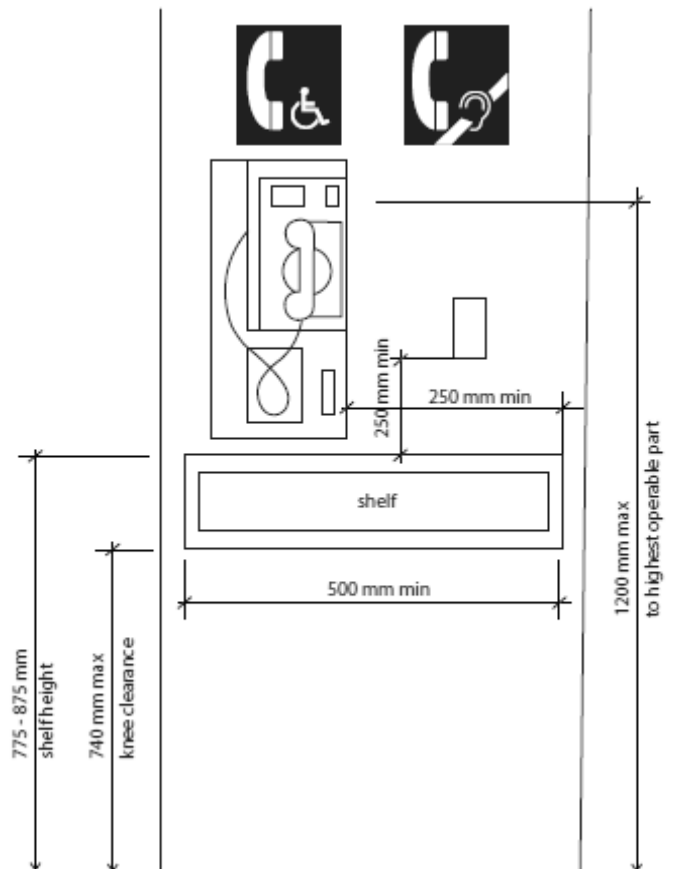


Figure A-3.8.3.15.  
Telephone Shelf

**a2.1 A-3.8.3.16. Drinking Fountains.**

Accessible drinking fountains require sufficient knee and toe clearance below to permit a person in a wheelchair to move close enough to the fountain to easily access the water stream. The 700 mm deep clear space in addition to the fountain depth of 450 mm minimum is required for the wheelchair user to pull into the fountain. That approach space may overlap with an adjacent barrier-free path of travel but should not prevent other building users from passing when the drinking fountain is being used.

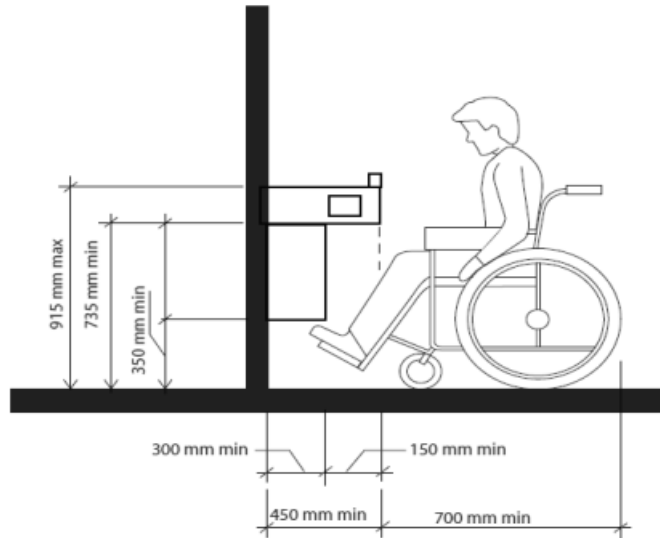
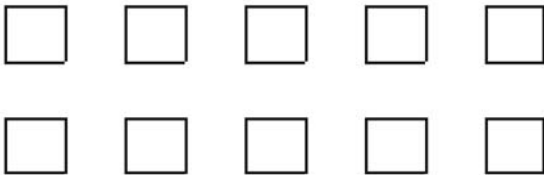


Figure A-3.8.3.16.  
Clearances Below Drinking Fountain

**A-3.9.3. Portable Classrooms.**

Case 1



Distance between classrooms: 6 m or more

- 3.2.2. applies to each classroom
- 3.2.3. does not apply between classrooms

Extinguisher required  
Access; street; hydrant; fire alarm; - not required

Case 2



Distance between classrooms: less than 6 m

3.2.2. applies to each classroom

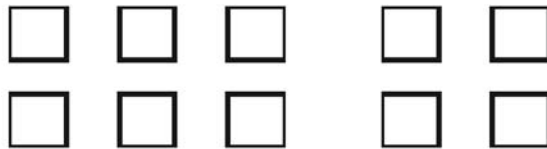
3.2.3. applies to each classroom

i.e. rating and construction of facing walls determined by limiting distance

Extinguisher required

Access; street; hydrant; fire alarm; - not required

Case 3



Distance between classrooms: less than 6 m

No. of classrooms in group: 6 max.

Distance between groups: not less than 12 m

3.2.2. applies to each group

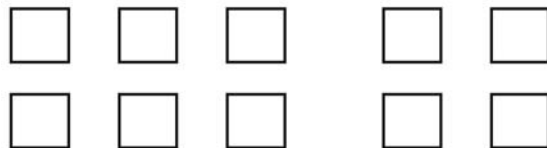
3.2.3. does not apply between classrooms within a group if the facing walls have a rating of 45 min, on the inside

3.2.3. applies between groups

Extinguisher required

Access; street; hydrant; fire alarm - not required

Case 4



Distance between classrooms: less than 6 m

No. of classrooms in group: 6 max.

Distance between groups: not less than 12 m

3.2.2. applies to each group

3.2.3. does not apply between classrooms within a group

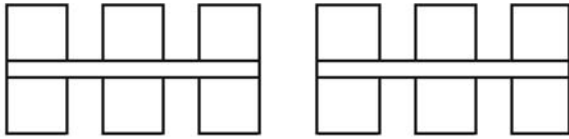
3.2.3. applies between groups

Extinguisher required

Fire alarm required (extension of main system)

Access; street; hydrant; - not required

## Case 5



Distance between classrooms: less than 6 m

No. of classrooms in group: 6 max.

Distance between groups: not less than 12 m

3.2.2. applies to each group

3.2.3. does not apply between classrooms within a group

3.2.3. applies between groups

Extinguisher required

Fire alarm required (extension of main system)

Access; street; hydrant; - not required

All other cases require:

- Fire extinguisher
- Access
- Street
- Hydrant
- Fire alarm: extension of existing system

**a<sub>2.1</sub> A-3.11.3.1.(9)(a) Barrier-Free Path of Travel at Pool Deck.**

The barrier-free path of travel throughout the pool deck area may be included in the 1800 mm wide pool deck space. The width of the barrier-free path of travel must not be reduced where a column or other obstruction interrupts the pool deck space.

**a<sub>2.1</sub> A-3.11.3.1.(14) Tactile Indicator at Pool Deck.**

The tactile indicator at the of the pool deck, signals a warning to people with no or low vision that they have reached the water's edge. The tactile indicator may be built-in or applied but must not present a tripping hazard. The indicator should be a continuous band installed parallel to the outside edge of the gutter around the pool perimeter.

**a<sub>2.1</sub> A-3.11.3.2.(1) Outdoor Pool Deck.**

Where an outdoor pool deck is provided, a barrier-free path that is an exterior walk is required between the building and the outdoor pool, including access from change rooms and showers, and throughout the pool deck area.

**a<sub>2.1</sub> A-3.11.3.3.(4) Pool Lift Space Requirements.**

The clear space required to transfer from a wheelchair to the pool lift may overlap the required barrier-free path of travel within the pool deck.

**a<sub>3</sub> A-3.11.5.1.(4)(b) Ramps into Public Swimming Pools.**

Despite the requirement that the hard surface area piercing the pool deck and leading to a submerged ramp must be at least 750 mm wide, it is recommended that the clear width of the access point to the ramp be at least the same width of the ramp and consistent with Clause 3.8.3.4.(1)(d).



October 24, 2014

**TO: BUILDING CODE USERS**

The enclosed replacement pages to the 2012 Building Code Compendium Edition<sup>1</sup> reflect recent amendments to the Building Code (O. Reg. 332/12) as well as to several Supplementary Standards and Appendix A. In particular, the 2012 Building Code Compendium is amended by:

- O. Reg. 191/14 effective January 1, 2015
  - for new provisions related to midrise wood buildings
  - for changes to Building Materials Evaluation Commission fees
  - for changes to professional design
  - minor housekeeping changes including revisions to editions of referenced standards
- Revisions to Supplementary Standards and Appendix A
  - SA-1 corresponding to regulatory changes
  - SB-1 to include elevations for Ontario locations
  - SB-2, SB-3 and SB-12 related to minor housekeeping changes
  - Appendix A related to regulatory changes and other minor housekeeping items

Changes to the Code are identified on the amendment pages by a unique symbol and a corresponding effective date. These pages should be inserted in your Code for January 1, 2015. Some of these pages may supersede amendment pages issued previously in the January 1, 2014 update amendment package containing pending amendment pages with an effective date of January 1, 2015.

ServiceOntario Publications is the official publisher and vendor of the 2012 Building Code Compendium and the amendment pages. You may contact ServiceOntario Publications by phone at 416-326-5300, 1-800-668-9938 (toll-free), TTY 1-800-268-7095 or [www.serviceontario.ca/publications](http://www.serviceontario.ca/publications).

For further information, please visit the Building Code website at [www.ontario.ca/buildingcode](http://www.ontario.ca/buildingcode).

A handwritten signature in black ink, appearing to read "Brenda Lewis".

Brenda Lewis  
Director

Encl.

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<sup>1</sup> The Compendium is not an official copy of the Act and Code. Official copies of the legislation can be accessed from [www.e-laws.gov.on.ca](http://www.e-laws.gov.on.ca).



# **2012 Building Code Compendium**

## **Volume 1**

**January 1, 2015 update  
(Containing O. Reg. 191/14)**

**COMMENCEMENT**

Ontario Regulation 332/12 comes into force on the 1st day of January, 2014.

- r<sub>1</sub>** Amending Ontario Regulation 151/13 comes into force on the 1st day of January, 2014.
- r<sub>2</sub>** Amending Ontario Regulation 360/13 comes into force on the 1st day of January, 2014.
- r<sub>2.1</sub>** Amending Ontario Regulation 360/13 comes into force on the 1st day of January, 2015.
- r<sub>3</sub>** Amending Ontario Regulation 361/13 comes into force on the 1st day of January, 2014.
- r<sub>3.1</sub>** Amending Ontario Regulation 361/13 comes into force on the 1st day of January, 2015.
- r<sub>4</sub>** Amending Ontario Regulation 368/13 comes into force on the 1st day of January, 2015.
- r<sub>5</sub>** Amending Ontario Regulation 191/14 comes into force on the 1st day of January, 2015.
  
- m<sub>1</sub>** Ruling of the Minister of Municipal Affairs and Housing (Minister’s Ruling) MR-13-S-24 comes into force on the 1st day of January 2014.

**EDITORIAL**

- e<sub>1</sub>** Editorial correction issued for January 1, 2014.
- e<sub>2</sub>** Editorial correction issued for January 1, 2014.
- e<sub>2.1</sub>** Editorial correction issued for January 1, 2015.
- e<sub>3</sub>** Editorial correction issued for January 1, 2015.

**COVER PHOTO CREDITS**

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**ISBN 978-1-4606-4420-1 (set)**  
**ISBN 978-1-4606-4421-8 (vol. 1)**  
**ISBN 978-1-4606-4765-3 (January 1, 2015 update)**

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# Code Amendment History

The first Ontario Building Code was issued in 1975. The 1975 and subsequent editions of the Building Code have been issued as follows:

Building Code Edition	Date Filed	Effective Date
O. Reg. 925/75 (1975 Building Code)	November 24, 1975	December 31, 1975
O. Reg. 583/83 (1983 Building Code)	September 15, 1983	November 30, 1983
O. Reg. 419/86 (1986 Building Code)	July 18, 1986	October 20, 1986
O. Reg. 413/90 (1990 Building Code)	July 30, 1990	October 1, 1990
O. Reg. 403/97 (1997 Building Code)	November 3, 1997	April 6, 1998
O. Reg. 350/06 (2006 Building Code)	June 28, 2006	December 31, 2006
O. Reg. 332/12 (2012 Building Code)	November 2, 2012	January 1, 2014

The following Table lists the amendments to the 2012 Building Code made since the filing of O. Reg. 332/12.

Regulatory Amendments to the 2012 Building Code – Ontario Regulation 332/12			
Amendment	Date Filed	Effective Date	Nature of Amendment
O. Reg. 151/13	May 9, 2013	January 1, 2014	Sprinklering of retirement homes
O. Reg. 360/13	December 20, 2013	January 1, 2014	Fees
		January 1, 2015	
O. Reg. 361/13	December 20, 2013	January 1, 2014	Housekeeping changes, fireplace emission limits Revise Supplementary Standard SA-1
		January 1, 2015	EIFS
O. Reg. 368/13	December 27, 2013	January 1, 2015	Accessibility
O. Reg. 191/14	September 23, 2014	January 1, 2015	Midrise wood construction, accessibility, housekeeping changes Revise Supplementary Standards SA-1, SB-1, SB-2, SB-3, SB-12

The following Table lists Minister's Rulings that have been made to adopt amendments to codes, formulae, standards, guidelines or procedures referenced in the 2012 Building Code.

Minister's Rulings to adopt amendments to codes, formulae, standards, guidelines or procedures referenced in the 2012 Building Code			
Ruling Number	Date of Ruling	Effective Date	Nature of Amendment
MR-13-S-24	September 1, 2013	January 1, 2014	Revise Table 1.3.1.2. of Division B Revise Supplementary Standards SA-1, SB-5 and SB-12



# Building Code Act, 1992

## S.O. 1992, Chapter 23

as amended by:	S.O. 1997	c. 24, s. 224 except s. 224(17) in force June 17, 1998
	S.O. 1997	c. 30, Schedule B, s. 1-20 in force April 6, 1998
	S.O. 1999	c. 12, Schedule M, s. 1-11 in force December 22, 1999
	S.O. 2000	c. 5, s. 7 in force January 1, 2001
	S.O. 2000	c. 26, Schedule K, s. 1 in force December 6, 2000
	S.O. 2002	c. 9, s. 5, 6(1), (2), 16, 24, 25, 27, 31(1), 34, 40(1), 41(1), 43, 51(6), (9), (11)-(15), 53(3), 54, 55 in force September 1, 2003
	S.O. 2002	c. 9, s. 1-4, 6(3), 7-15, 17-19, 20(1), (2), 21-23, 26, 28-30, 31(2), 32, 33, 35-39, 40(2), (3), 41(2), 42, 44-50, 51(1), (2), (4), (5), (7), (8), (10), 52, 53(1), (2) in force July 1, 2005
	S.O. 2002	c. 17, Schedule C, s. 1-6 in force July 1, 2005
	S.O. 2002	c. 17, Schedule F, Table in force January 1, 2003
	S.O. 2005	c. 33, s. 1 in force December 15, 2005
	S.O. 2006	c. 19, Schedule O, s. 1 in force June 22, 2006
	S.O. 2006	c. 21, Schedule F, s. 104, 136(1) in force July 25, 2007
	S.O. 2006	c. 22, s. 112 in force July 3, 2007
	S.O. 2006	c. 32, Schedule C, s. 3 in force January 1, 2007
	S.O. 2006	c. 33, Schedule Z.3, s. 4 in force January 1, 2009
	S.O. 2006	c. 35, Schedule C, s. 8 in force August 20, 2007
	S.O. 2009	c. 12, Schedule J in force May 14, 2009
	S.O. 2009	c. 33, Schedule 6, s. 43 in force June 1, 2011
	S.O. 2009	c. 33, Schedule 21, s. 2(1) in force December 15, 2009
	S.O. 2009	c. 33, Schedule 21, s. 2(4), (7), (8) and (9) in force July 1, 2010
	S.O. 2009	c. 33, Schedule 21, s. 2(2), (3), (5) and (6) in force January 1, 2011
	S.O. 2010	c. 19, Schedule 2, s. 1, s. 2(1), (2) in force April 1, 2011
	S.O. 2014	c. 7, Schedule 3, s. 1 in force July 23, 2014

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### Forms

(9) The power to prescribe forms under clause (1)(f) does not include the power to prescribe a form for a particular purpose where there is a form for that purpose prescribed in the building code or approved by the Minister. 2002, c. 9, s. 11(2); 2006, c. 21, Sched. F, s. 104(4).

### Code of Conduct

7.1(1) A principal authority shall establish and enforce a code of conduct for the chief building official and inspectors. 2002, c. 9, s. 12.

### Purposes

- (2) The following are the purposes of a code of conduct:
1. To promote appropriate standards of behaviour and enforcement actions by the chief building official and inspectors in the exercise of a power or the performance of a duty under this Act or the building code.
  2. To prevent practices which may constitute an abuse of power, including unethical or illegal practices, by the chief building official and inspectors in the exercise of a power or the performance of a duty under this Act or the building code.
  3. To promote appropriate standards of honesty and integrity in the exercise of a power or the performance of a duty under this Act or the building code by the chief building official and inspectors. 2002, c. 9, s. 12.

### Contents

(3) A code of conduct must provide for its enforcement and include policies or guidelines to be used when responding to allegations that the code has been breached and disciplinary actions that may be taken if the code is breached. 2002, c. 9, s. 12.

### Public Notice

(4) The principal authority shall ensure that the code of conduct is brought to the attention of the public. 2002, c. 9, s. 12.

## Construction and Demolition

### Building Permits

8.(1) No person shall construct or demolish a building or cause a building to be constructed or demolished unless a permit has been issued therefor by the chief building official. 1992, c. 23, s. 8(1); 1997, c. 30, Sched. B, s. 7(1).

### Application for Permit

(1.1) An application for a permit to construct or demolish a building may be made by a person specified by regulation and the prescribed form or the form approved by the

Minister must be used and be accompanied by the documents and information specified by regulation. 2002, c. 9, s. 14(1); 2006, c. 21, Sched. F, s. 104(5).

### Issuance of Permits

- (2) The chief building official shall issue a permit referred to in subsection (1) unless,
- (a) the proposed building, construction or demolition will contravene this Act, the building code or any other applicable law;
  - (b) the applicant is a builder or vendor as defined in the *Ontario New Home Warranties Plan Act* and is not registered under that Act;
  - (b.1) the *Architects Act* or the *Professional Engineers Act* requires that the proposed construction of the building be designed by an architect or a professional engineer or a combination of both and the proposed construction is not so designed;
  - (c) a person who prepared drawings, plans, specifications or other documents or gave an opinion concerning the compliance of the proposed building or construction with the building code does not have the applicable qualifications, if any, set out in the building code or does not have the insurance, if any, required by the building code;
  - (d) the plans review certificate, if any, required for the application does not contain the prescribed information;
  - (e) the application for the permit is not complete; or
  - (f) any fees due have not been paid. 2002, c. 9, s. 14(2); 2014, c. 7, Sched. 3, s. 1.

### Restriction

(2.1) If the application includes a plans review certificate that contains the prescribed information, the chief building official is not entitled to refuse to issue the permit on the grounds that the proposed construction of the building to which the certificate relates does not comply with the building code. 2002, c. 9, s. 14(2).

### Decision

(2.2) If an application for a permit meets the requirements prescribed by regulation, the chief building official shall, unless the circumstances prescribed by regulation apply, decide within the period prescribed by regulation whether to issue the permit or to refuse to issue it. 2009, c. 33, Sched. 21, s. 2(2).

### Same, Reasons for Refusal

(2.3) If the chief building official refuses to issue the permit, he or she shall inform the applicant of all of the reasons for the refusal of the permit and shall do so within the period prescribed by regulation. 2002, c. 9, s. 14(2).

### Conditional Permit

(3) Even though all requirements have not been met to obtain a permit under subsection (2), the chief building official may issue a conditional permit for any stage of construction if,

- (a) compliance with by-laws passed under sections 34 and 38 of the *Planning Act* and with such other applicable law as may be set out in the building code has been achieved in respect of the proposed building or construction;
- (b) the chief building official is of the opinion that unreasonable delays in the construction would occur if a conditional permit is not granted; and
- (c) the applicant and such other person as the chief building official determines agree in writing with the municipality, upper-tier municipality, board of health, planning board, conservation authority or the Crown in right of Ontario to,
  - (i) assume all risk in commencing the construction,
  - (ii) obtain all necessary approvals in the time set out in the agreement or, if none, as soon as practicable,
  - (iii) file plans and specifications of the complete building in the time set out in the agreement,
  - (iv) at the applicant's own expense, remove the building and restore the site in the manner specified in the agreement if approvals are not obtained or plans filed in the time set out in the agreement, and
  - (v) comply with such other conditions as the chief building official considers necessary, including the provision of security for compliance with subclause (iv). 1992, c. 23, s. 8(3); 1997, c. 30, Sched. B, s. 7(2); 1999, c. 12, Sched. M, s. 5(1); 2002, c. 17, Sched. F, Table.

### Delegation re Conditional Permits

(3.1) A principal authority may, in writing, delegate to the chief building official the power to enter into agreements described in clause (3)(c) and may impose conditions or restrictions with respect to the delegation. 2002, c. 9, s. 14(3).

### Criteria

(4) In considering whether a conditional permit should be granted, the chief building official shall, among other matters, have regard to the potential difficulty in restoring the site to its original state and use if required approvals are not obtained. 1992, c. 23, s. 8(4).

### Registration

(5) Any agreement entered into under clause (3)(c) may be registered against the land to which it applies and the

municipality, upper-tier municipality, board of health, planning board, conservation authority or the Province of Ontario, as the case may be, is entitled to enforce its provisions against the owner and, subject to the *Registry Act* and the *Land Titles Act*, any and all subsequent owners of the land. 1999, c. 12, Sched. M, s. 5(2); 2002, c. 17, Sched. F, Table.

### Enforcement of Agreement

(6) If the chief building official determines that a building has not been removed or a site restored as required by an agreement under clause (3)(c), the chief building official may cause the building to be removed and the site restored and for this purpose the chief building official, an inspector and their agents may enter upon the land and into the building governed by the agreement at any reasonable time without a warrant. 1992, c. 23, s. 8(6).

### Lien

(7) If the building is in a municipality, the municipality shall have a lien on the land for the amount spent on the removal of the building and restoration of the site under subsection (6) and the amount shall have priority lien status as described in section 1 of the *Municipal Act, 2001* or section 3 of the *City of Toronto Act, 2006*, as the case may be. 2002, c. 17, Sched. F, Table; 2006, c. 32, Sched. C, s. 3(1).

### Deemed Taxes

(8) If the building is in territory without municipal organization, the amount spent on the removal of the building and restoration of the site under subsection (6) is a debt owing to the Crown and may be collected under the *Provincial Land Tax Act, 2006* as if it was tax imposed under that Act. 1992, c. 23, s. 8(8); 2006, c. 33, Sched. Z.3, s. 4(1).

### Disclosure of Prescribed Information

(8.1) The chief building official shall, within the period and in the manner prescribed by regulation, give to the corporation designated under section 2 of the *Ontario New Home Warranties Plan Act* the information prescribed by regulation relating to permits issued under this section and the applications for those permits. 2009, c. 33, Sched. 21, s. 2(3).

### Referral of Plans, etc.

(9) Upon reasonable grounds, the chief building official or registered code agency may refer drawings, plans or specifications accompanying applications for permits or the reports arising out of the general review of the construction of a building to the Association of Professional Engineers of Ontario or the Ontario Association of Architects for the purpose of determining if the *Professional Engineers Act* or

of Toronto Act, 2006, as the case may be. 2002, c. 17, Sched. C, s. 5(2); 2006, c. 32, Sched. C, s. 3(6).

### Deemed Taxes

(11) If the building is in territory without municipal organization, the amount determined by the judge to be recoverable is a debt owing to the Crown and may be collected under the *Provincial Land Tax Act, 2006* as if it was tax imposed under that Act. 2002, c. 9, s. 26; 2006, c. 33, Sched. Z.3, s. 4(3).

## Maintenance Inspection Programs

### Maintenance Inspections

**15.10.1(1)** An inspector may enter upon land and into buildings at any reasonable time without a warrant for the purpose of conducting a maintenance inspection. 2006, c. 22, s. 112(8).

### Order

(2) An inspector who finds a contravention of this Act or the building code may make an order directing compliance with this Act or the building code and may require the order to be carried out immediately or within such time as is specified in the order. 2006, c. 22, s. 112(8).

### Service

(3) The order shall be served on the person whom the inspector believes is contravening this Act or the building code. 2006, c. 22, s. 112(8).

### Form and Contents

(4) The prescribed form or the form approved by the Minister must be used for the order and it must contain sufficient information to specify the nature of the contravention and its location and the nature of the compliance that is required. 2006, c. 22, s. 112(8).

### Posting

(5) The inspector may post a copy of the order on the site of the maintenance inspection. 2006, c. 22, s. 112(8).

## Qualifications

### Qualifications for Various Positions

**15.11(1)** A person is not eligible to be appointed as a chief building official unless he or she has the qualifications set out in the building code for the position. 2002, c. 9, s. 27.

### Same

(2) Subsection (1) also applies to every inspector who has the same powers and duties as a chief building official in relation to sewage systems or to plumbing, to the extent of those powers and duties. 2002, c. 9, s. 27.

### Qualifications for Inspectors

(3) A person is not eligible to be appointed as an inspector under this Act unless he or she has the qualifications set out in the building code for the position. 2002, c. 9, s. 27.

### Qualifications for Registered Code Agencies

(4) A person is not eligible to be appointed as a registered code agency under this Act unless the person has the qualifications and meets the requirements set out in the building code. 2002, c. 9, s. 27; 2006, c. 19, Sched. O, s. 1(7).

### Qualifications for Designers

(5) A person is not eligible to engage in any of the following activities unless he, she or it has the qualifications and meets the requirements set out in the building code to be a designer:

1. Prepare a design or give other information or opinion concerning whether a building or part of a building complies with the building code, if the design, information or opinion is to be submitted to a chief building official in connection with,
  - i. an application for a permit,
  - ii. a request for the authorization referred to in subsection 8(12) or (13), or
  - iii. a report described in paragraph 2.
2. If a general review of the construction of a building or part of a building is required by the building code, prepare a written report based on the general review. 2002, c. 9, s. 27; 2006, c. 19, Sched. O, s. 1(7).

### Same

(6) In subsection (5),

“design” includes a plan, specification, sketch, drawing or graphic representation respecting the construction of a building. 2002, c. 9, s. 27.

### Prohibition

(7) No person shall represent, directly or indirectly, that he, she or it has the qualifications or meets the requirements established under this section if the person does not have those qualifications or does not meet those requirements. 2002, c. 9, s. 27; 2006, c. 19, Sched. O, s. 1(7).

### Non Application

(8) Subsection (5) does not apply to a holder of any licence or certificate issued under the *Architects Act* or the *Professional Engineers Act*. 2014, c. 7, Sched. 3, s. 2.

### Qualifications re Sewage Systems

**15.12(1)** No person shall engage in the business of constructing on site, installing, repairing, servicing, cleaning or emptying sewage systems unless the person has the qualifications and meets the requirements set out in the building code. 2002, c. 9, s. 27; 2006, c. 19, Sched. O, s. 1(8).

### Prohibition

**(2)** No person shall represent, directly or indirectly, that he, she or it has the qualifications or meets the requirements referred to in subsection (1) if the person does not have those qualifications or does not meet those requirements. 2002, c. 9, s. 27; 2006, c. 19, Sched. O, s. 1(8).

### Duty to Notify the Chief Building Official

**(3)** If any part of the construction of a building will be undertaken by a person described in subsection (1) (a “specified person”), no person shall begin or continue the construction of a sewage system, or cause it to begin or continue, unless the person has given the chief building official the prescribed information about the specified person. 2002, c. 9, s. 27; 2006, c. 19, Sched. O, s. 1(8).

### Duty to Have Insurance

**15.13(1)** Every registered code agency, every person referred to in subsection 15.11(5) and such other persons as may be specified in the building code who construct buildings are required to have the insurance coverage specified by the building code. 2002, c. 9, s. 27; 2006, c. 19, Sched. O, s. 1(9).

### Exception

**(2)** Subsection (1) does not apply to a person who is a builder or vendor within the meaning of the *Ontario New Home Warranties Plan Act* in respect of the construction of a building. 2002, c. 9, s. 27; 2006, c. 19, Sched. O, s. 1(10).

### Prohibition

**(3)** No person shall represent, directly or indirectly, that he, she or it has the insurance coverage required by subsection (1) if the person does not have that insurance coverage. 2002, c. 9, s. 27; 2006, c. 19, Sched. O, s. 1(10).

### Qualification or Requirement

**(4)** If the building code so provides, the insurance coverage constitutes a qualification or requirement for the purposes of a position referred to in section 15.11. 2002, c. 9, s. 27.

### Duty to Notify the Chief Building Official

**(5)** If any part of the construction of a building will be undertaken by a person who is required by subsection (1) to

have insurance (a “specified person”), no person shall begin or continue the construction, or cause it to begin or continue, unless the person has given the chief building official the prescribed information about the specified person and the insurance coverage of the specified person. 2002, c. 9, s. 27; 2006, c. 19, Sched. O, s. 1(10).

## Powers and Duties of Registered Code Agencies

### Notice to Chief Building Official

**15.14(1)** Every registered code agency shall give the chief building official such information as may be prescribed by regulation. 2002, c. 9, s. 28.

### Notice to the Director

**(2)** Every registered code agency shall give the director such information as may be prescribed by regulation. 2002, c. 9, s. 28.

### Functions of Registered Code Agencies

**15.15** The following are the functions that a registered code agency may be appointed to perform in respect of the construction of a building:

1. Review designs and other materials to determine whether the proposed construction of a building complies with the building code.
2. Issue plans review certificates.
3. Issue change certificates.
4. Inspect the construction of a building for which a permit has been issued under this Act.
5. Issue final certificates.
6. Perform such other functions as may be authorized under this Act or in the building code. 2002, c. 9, s. 28.

### Scope of Agency's Powers

**15.16(1)** A registered code agency may exercise the powers and perform the duties specified in this Act and the building code in respect only of the functions and the building specified in a particular appointment. 2002, c. 9, s. 28.

### Confidentiality

**(2)** A registered code agency shall not collect, use or disclose information except in accordance with the building code. 2002, c. 9, s. 28.

### Persons Acting on Behalf of an Agency

**15.17(1)** A registered code agency may authorize, in writing, one or more prescribed persons to exercise powers and perform its functions under this Act, subject to such conditions as may be prescribed by regulation. 2002, c. 9, s. 28.

3. governing the manner of construction and types and quality of materials used therein;
- 3.1 establishing objectives governing the standards for the construction and demolition of buildings;
- 3.2 prescribing the persons who may apply for a permit under section 8 and the information to be provided with an application for a permit under section 8;
- 3.3 prescribing the information that a plans review certificate must contain for the purposes of clause 8(2)(d);
- 3.4 prescribing requirements and circumstances for the purposes of subsection 8(2.2) and prescribing the period within which the chief building official is required to make a decision under subsection 8(2.2) and the manner of determining when the period begins;
  - 3.4.1 prescribing the period within which the chief building official is required to inform an applicant under subsection 8(2.3) and the manner of determining when the period begins;
- 3.5 prescribing the information that a plans review certificate must contain under subsection 8(2.1) and a change certificate must contain under subsection 8(14);
4. setting out the applicable laws with which compliance must be achieved before a conditional permit may be issued under subsection 8(3);
  - 4.1 prescribing the information that a chief building official is required to give under subsection 8(8.1) and prescribing the period within which and the manner in which the chief building official shall give the information;
5. governing the design of buildings and the use to which they may be put;
6. REPEALED: 2009, c. 33, Sched. 21, s. 2(7).
7. setting out rules and policies to be observed in the interpretation of the building code by any person exercising a power or discretion conferred under the Act or the building code;
8. determining an increase in hazard for the purposes of section 10;
9. adopting by reference, in whole or in part, with such changes as the Lieutenant Governor in Council considers necessary, any code, formula, standard, guideline, protocol or procedure and requiring compliance with any code, formula, standard, guideline, protocol or procedure that is so adopted;
  - 9.1 requiring any part of the construction of a building described in clauses 11(3)(a) and (b) of the *Architects Act* or subsection 12(4) and clause 12(5)(a) of the *Professional Engineers Act* to be designed by an architect or a professional engineer or a combination of both;
10. requiring any part of the design, construction or demolition of a building to be under the general review of an architect or a professional engineer or a combination of both and that copies of reports arising from the general review be provided to the chief building official or to a registered code agency;
11. designating organizations to test prefabricated building units to the standards prescribed by the building code and providing for the placing of their label on units that conform to the standards;
12. requiring the approval of an inspector or a registered code agency in respect of any method, matter or thing;
13. requiring the posting on buildings or sites of construction or demolition of such documents or information as is prescribed;
14. requiring such documents, information, records, drawings or specifications as are prescribed to be kept on the site of construction or demolition;
  - 14.1 prescribing the records to be kept by any person and the returns of information and reports to be made by any person and providing for the inspection and examination of the records;
15. requiring notice to be given to the chief building official, an inspector or a registered code agency respecting any matter in the course of construction, including notice of readiness for inspection at the stages of construction of a building, and specifying the person required to give the notices;
  - 15.1 prescribing the type and manner of inspections for the purposes of subsection 10.2(2) (readiness for inspection) and prescribing the period within which the inspections must be carried out;
  - 15.2 prescribing the information that must be given to the chief building official about a person who is required by subsection 15.12(3) to have certain qualifications or to meet certain requirements or both;
  - 15.3 prescribing the information that must be given to the chief building official under subsection 15.13(5) about any person required to have insurance coverage and about the coverage;
  - 15.4 prescribing the manner in which a referral to the chief building official under subsection 14(5) must be made;
16. requiring notice to be given to the chief building official respecting the change in prescribed classes of use made of a building;
17. requiring the chief building official to transmit to the director such returns or reports as are prescribed;
18. prescribing conditions under which a building or any part of a building may be occupied, including requiring notice to be given to a chief building

- official or registered code agency and requiring permission to be received from the official or agency before the building or part may be occupied;
19. exempting any building or person or class thereof from compliance with all or any part of this Act and the regulations and prescribing conditions for the exemption;
  20. prescribing the form of a warrant and the form in which the information upon oath will be taken under section 21;
  21. requiring the alteration of any part of an existing building where construction in relation to the building affects that part;
  22. requiring the payment of fees in respect of applications to the Building Materials Evaluation Commission and prescribing the amounts thereof;
  - 22.1 prescribing the manner in which the Minister's written interpretations under section 28.1 are to be made available to the public;
  23. designating materials evaluation bodies for the purposes of section 29;
  24. establishing criteria to be followed by the Minister in respect of a ruling under section 29;
  25. prescribing procedures of the Building Code Commission and the Building Materials Evaluation Commission;
  26. prescribing the persons to whom notice shall be given of the issuance of a permit, the time for giving the notice and the class of buildings for which notice is required;
  27. defining, for the purposes of this Act and the building code, any word or expression not defined in this Act, and in so doing may define a word or expression differently for different provisions;
  28. prescribing forms and providing for their use or requiring that forms provided by the Minister or the director be used, and prescribing the information that must be contained in the forms;
  29. prescribing boards of health, planning boards and conservation authorities that are responsible for the enforcement of the provisions of this Act related to sewage systems and the municipalities and territory without municipal organization in which they will have jurisdiction to carry out the enforcement;
  30. permitting chief building officials or registered code agencies, subject to such conditions as are set out in the building code, to allow the use of materials, systems and building designs other than those prescribed in the building code with respect to the construction of buildings;
  31. governing the location of sewage systems;
  32. designating areas in which any class of sewage system may not be established;
  33. prescribing qualifications for chief building officials, inspectors, registered code agencies, designers and other persons referred to in section 15.12 and related matters including,
    - i. requiring different qualifications for different classes of officials, inspectors, agencies, designers and other persons,
    - ii. requiring assessments or examinations in connection with obtaining or maintaining the required qualifications,
    - iii. establishing one or more registers identifying persons with qualifications and such other information as the regulation may require, and
    - iv. requiring fees to be paid in connection with the qualifications;
  34. establishing certification, registration or licensing schemes for chief building officials, inspectors, registered code agencies, designers and other persons referred to in sections 15.11 (qualifications) and 15.12 (qualifications re sewage systems) which may include provision for,
    - i. the eligibility or ineligibility of classes of persons to obtain certification, registration or a licence,
    - ii. categories or classes of certification, registration or licence,
    - iii. application for the issuance, amendment or renewal of a certificate, registration or a licence,
    - iv. the issuance, amendment or renewal of a certificate, registration or a licence or the refusal to do so,
    - v. suspension, revocation or cancellation of a certificate, registration or a licence,
    - vi. the imposition of conditions relating to a certificate, registration or licence, including conditions relating to the qualifications of directors, officers, partners, employees and others associated with the holder of the certificate, registration or licence, conditions relating to the manner in which specified persons carry out activities under this Act and the building code and conditions relating to insurance coverage, including the kinds and amounts of insurance and the circumstances in which a person will be considered to be covered by insurance,
    - vii. the establishment and maintenance of one or more registers containing information about the holders of certificates, registrations or licences and containing such information as may be given to the director under paragraph 35.1, and
    - viii. fees payable in connection with certification, registration or licensing;

35. prescribing an appeal to a prescribed tribunal from a refusal to issue or renew a certificate, registration or licence or a suspension, revocation or cancellation of a certificate, registration or licence, prescribing the circumstances in which the decision appealed from takes effect immediately despite the appeal, and prescribing the circumstances in which the tribunal may stay the decision pending the outcome of the appeal;
- 35.1 requiring the Ontario Association of Architects and the Association of Professional Engineers of Ontario to give the prescribed information to the director;
- 35.2 prescribing fees payable to the Crown by the Ontario Association of Architects and the Association of Professional Engineers of Ontario in connection with the registers referred to in paragraphs 33 and 34 and in respect of the development of training materials for a purpose described in paragraph 33 or 34;
- 35.3 prescribing the persons who are required under subsection 15.13(1) to have insurance coverage and prescribing the kinds and amounts of insurance that are required and the circumstances in which the person will be considered to be covered by insurance;
- 35.4 prescribing additional functions that registered code agencies may perform;
- 35.5 prescribing the manner in which registered code agencies and persons authorized by them under subsection 15.17(1) are required to perform any of their functions;
- 35.6 prescribing the manner in which a registered code agency is authorized to collect, use and disclose information;
- 35.7 prescribing circumstances in which a registered code agency may be appointed in respect of a building even though an inspector or another registered code agency has already carried out a function described in section 15.15;
- 35.8 prescribing circumstances in which a registered code agency cannot be appointed, including circumstances that would constitute a conflict of interest for a registered code agency;
- 35.9 prescribing the information that a registered code agency is required to give to the director or to the chief building official;
- 35.10 prescribing the classes of persons that may be authorized by a registered code agency under subsection 15.17(1), the conditions to which the authorization may be subject and the information that must be included in a certificate of authorization;
- 35.11 prescribing certificates and the form of certificates referred to in subsection 15.18(2), the information that the certificates are required to contain and the circumstances and manner in which registered code agencies are permitted to issue them;
- 35.12 prescribing the circumstances in which the appointment of a registered code agency may be terminated and the conditions that must be met before the termination of an appointment, including,
- i. requiring the consent of the director and authorizing the director to impose conditions and restrictions in connection with the consent, and
  - ii. authorizing an appeal to a person specified in the regulations from a decision of the director or conditions imposed by the director;
36. designating persons, specifying powers of a chief building official or inspector that those designated persons may exercise to enforce this Act and the building code in relation to the qualifications of persons described in sections 15.11 and 15.12 and the requirement in section 15.13 for insurance coverage, and establishing conditions for the exercise of the specified powers;
37. prescribing any transitional matters necessary for the regulation of sewage systems, including matters relating to,
- i. licensing and certification and the qualifications of inspectors and persons described in subsection 15.12(1),
  - ii. certificates of approval and orders issued under the *Environmental Protection Act*,
  - iii. enforcement issues,
  - iv. matters commenced under the *Environmental Protection Act*, including appeals,
  - v. records and documents to be kept or transferred and the payment of associated costs,
  - vi. certification of records and their use in courts,
  - vii. the continuation of matters commenced under the *Environmental Protection Act*, and
  - viii. the transfer of responsibilities involving any municipality or any board of health, conservation authority or planning board prescribed under section 3.1;
38. permitting the Building Code Commission to sit in one or more divisions simultaneously upon such conditions as may be prescribed in the regulation;
39. authorizing one member of the Building Code Commission, with the approval of the chair or vice-chair, to hear and determine any matter and deeming the member to constitute the commission for that purpose, under such conditions as may be prescribed in the regulation;

- 39.1 prescribing relationships for the purposes of clause 23(3)(d) (eligibility to be a member of the Commission);
- 39.2 prescribing the period within which the Building Code Commission must hold a hearing in respect of a dispute described in clause 24(1)(b) or (c);
- 39.3 providing for transitional provisions relating to the effect of a repeal or re-enactment of any provision of this Act;
- 40. prescribing any matter referred to in this Act as prescribed. 1992, c. 23, s. 34(1); 1997, c. 30, Sched. B, s. 17(1-4); 1999, c. 12, Sched. M, s. 11; 2002, c. 9, s. 51(1, 2, 4-14); 2006, c. 19, Sched. O, s. 1(12-17); 2006, c. 35, Sched. C, s. 8(3); 2009, c. 33, Sched. 21, s. 2(5-7); 2014, c. 7, Sched. 3, s. 3.

### Standards for Existing Buildings

(2) The Lieutenant Governor in Council may make regulations to establish standards that existing buildings must meet even though no construction is proposed, including regulations,

- (a) prescribing any or all of the matters set out in subsection (1) as applicable to existing buildings;
- (b) establishing standards for maintenance, retrofit, operation, occupancy and repair;
- (c) prescribing standards related to resource conservation and environmental protection; and
- (d) prescribing standards, methods and equipment for the inspection, cleaning, disinfecting and emptying of sewage systems. 1992, c. 23, s. 34(2); 1997, c. 30, Sched. B, s. 17(5); 2006, c. 22, s. 112(10).

### Discretionary Maintenance Inspection Programs

(2.1) The Lieutenant Governor in Council may make regulations governing programs established under clause 7(1)(b.1), including regulations,

- (a) governing the classes of buildings and area affected by a program;
- (b) governing the type and manner of inspections that are conducted under a program and the frequency of the inspections;
- (c) authorizing the principal authority that establishes a program, as an alternative to conducting an inspection, to accept a certificate, in a form approved by the Minister, that is signed by a person who belongs to a class of persons specified by the regulations and that confirms that the person has conducted an inspection and is of the opinion that the building that was inspected complies with the standards prescribed under clause (2)(b) that are enforced by the program. 2006, c. 22, s. 112(11).

### Sewage System Maintenance Inspection Programs

(2.2) The Lieutenant Governor in Council may make regulations establishing and governing programs to enforce standards prescribed under clause (2)(b) in relation to sewage systems, including regulations,

- (a) governing the classes of sewage systems affected by the program;
- (b) requiring a principal authority that has jurisdiction in the area affected by the program to administer the program for that area and to conduct inspections under the program;
- (c) governing the type and manner of inspections that are conducted under the program and the frequency of the inspections;
- (d) authorizing the principal authority that administers the program, as an alternative to conducting an inspection, to accept a certificate, in a form approved by the Minister, that is signed by a person who belongs to a class of persons specified by the regulations and that confirms that the person has conducted an inspection and is of the opinion that the sewage system that was inspected complies with the standards prescribed under clause (2)(b) that are enforced by the program. 2006, c. 22, s. 112(11).

### Application

(3) A regulation made under this section applies to buildings whether erected before or after the coming into force of this Act. 1992, c. 23, s. 34(3).

### Limited Application

(4) Any regulation made under this section may be limited in its application territorially or to any class of activity, matter, person or thing. 1997, c. 30, Sched. B, s. 17(6).

### Same

(4.1) A class under this Act may be defined with respect to any attribute, quality or characteristic and may be defined to consist of, include or exclude any specified member whether or not with the same attributes, qualities or characteristics. 1997, c. 30, Sched. B, s. 17(6).

### Retroactive

(4.2) A regulation made under paragraph 37 of subsection (1) may be retroactive. 1997, c. 30, Sched. B, s. 17(6).

### Purposes

(5) The purposes of the regulations made under this section are,



# Part 1

## Compliance and General

### Section 1.1. Organization and Application

#### 1.1.1. Organization of this Code

##### 1.1.1.1. Scope of Division A

(1) Division A contains compliance and application provisions and the *objectives* and *functional statements* of this Code.

##### 1.1.1.2. Scope of Division B

(1) Division B contains the *acceptable solutions* of this Code.

##### 1.1.1.3. Scope of Division C

(1) Division C contains the administrative provisions of this Code.

##### 1.1.1.4. Internal Cross-References

(1) If a provision of this Code contains a reference to another provision of this Code but no Division is specified, both provisions are in the same Division of this Code.

#### 1.1.2. Application of Division B (See Appendix A.)

##### 1.1.2.1. Application of Parts 1, 7 and 12

r<sub>5</sub> (1) Part 1 of Division B apply to all *buildings*.

r<sub>5</sub> (2) Subject to Article 1.1.2.6., Parts 7 and 12 of Division B apply to all *buildings*.

##### 1.1.2.2. Application of Parts 3, 4, 5 and 6

(1) Subject to Articles 1.1.2.6. and 1.3.1.2., Parts 3, 5 and 6 of Division B apply to all *buildings*,

(a) used for *major occupancies* classified as,

- r<sub>1</sub> (i) Group A, *assembly occupancies*,  
(ii) Group B, *care, care and treatment or detention occupancies*, or  
(iii) Group F, Division 1, *high hazard industrial occupancies*, or

(b) exceeding 600 m<sup>2</sup> in *building area* or exceeding three *storeys* in *building height* and used for *major occupancies* classified as,

- (i) Group C, *residential occupancies*,  
(ii) Group D, *business and personal services occupancies*,  
(iii) Group E, *mercantile occupancies*, or  
(iv) Group F, Divisions 2 and 3, *medium hazard industrial occupancies* and *low hazard industrial occupancies*.

- (2) Subject to Articles 1.1.2.6. and 1.3.1.2., Part 4 of Division B applies to,
  - (a) *post-disaster buildings*,
  - (b) *buildings* described in Sentence (1),
  - (c) a retaining wall exceeding 1 000 mm in exposed height adjacent to,
    - (i) public property,
    - (ii) access to a *building*, or
    - (iii) private property to which the public is admitted,
  - (d) a pedestrian bridge appurtenant to a *building*,
  - (e) a crane runway,
  - (f) an exterior storage tank and its supporting structure that is not regulated by the *Technical Standards and Safety Act, 2000*,
  - (g) signs regulated by Section 3.15. of Division B that are not structurally supported by a *building*,
  - (h) a structure that supports a wind turbine generator having a rated output of more than 3 kW,
  - (i) an *outdoor pool* that has a water depth greater than 3.5 m at any point, and
  - (j) a *permanent solid nutrient storage facility* with supporting walls exceeding 1 000 mm in exposed height.
- (3) Section 3.11. of Division B applies to *public pools*.
- (4) Section 3.12. of Division B applies to *public spas*.
- (5) Section 3.15. of Division B applies to signs.

### 1.1.2.3. Application of Part 8

- r5 (1) Subject to Article 1.1.2.6., Part 8 of Division B applies to the design, *construction*, operation and maintenance of all *sewage systems* and to the *construction of buildings* in the vicinity of *sewage systems*.

### 1.1.2.4. Application of Part 9

- (1) Subject to Articles 1.1.2.6. and 1.3.1.2., Part 9 of Division B applies to all *buildings*,
  - (a) of three or fewer *storeys* in *building height*,
  - (b) having a *building area* not exceeding 600 m<sup>2</sup>, and
  - (c) used for *major occupancies* classified as,
    - (i) Group C, *residential occupancies*,
    - (ii) Group D, *business and personal services occupancies*,
    - (iii) Group E, *mercantile occupancies*, or
    - (iv) Group F, Divisions 2 and 3, *medium hazard industrial occupancies* and *low hazard industrial occupancies*.

### 1.1.2.5. Application of Part 10

- (1) Part 10 of Division B applies to existing *buildings* requiring a permit under section 10 of the Act.

### 1.1.2.6. Application of Part 11

- (1) Except as provided in Sentence (2), Part 11 of Division B applies to the design and *construction* of existing *buildings*, or parts of existing *buildings*, that have been in existence for at least five years.
- (2) If a *building* has been in existence for at least five years but includes an addition that has been in existence for less than five years, Part 11 of Division B applies to the entire *building*.

*Bathroom group* means a group of plumbing *fixtures* installed in the same room, consisting of one domestic-type lavatory, one water closet and either one bathtub, with or without a shower, or one one-headed shower.

*Bearing surface* means the contact surface between a *foundation unit* and the *soil* or *rock* on which the *foundation unit* bears.

*Boarding, lodging or rooming house* means a *building*,

- (a) that has a *building height* not exceeding three *storeys* and a *building area* not exceeding 600 m<sup>2</sup>,
- (b) in which lodging is provided for more than four persons in return for remuneration or for the provision of services or for both, and
- (c) in which the lodging rooms do not have both bathrooms and kitchen facilities for the exclusive use of individual occupants.

*Boiler* means an *appliance* intended to supply hot water or steam for space heating, processing or power purposes.

*Bottle trap* means a *trap* that retains water in a closed chamber and that seals the water by submerging the inlet pipe in the liquids or by a partition submerged in the liquids.

*Branch* means a *soil* or *waste pipe* that is connected at its upstream end to the junction of two or more *soil* or *waste pipes* or to a *soil* or *waste stack* and that is connected at its downstream end to another *branch*, a sump, a *soil* or *waste stack* or a *building drain*.

*Branch vent* means a *vent pipe* that is connected at its lower end to the junction of two or more *vent pipes* and that, at its upper end, is connected to another *branch vent*, a *stack vent*, a *vent stack* or a *header*, or terminates in *open air*.

*Breeching* means a *flue pipe* or chamber for receiving *flue* gases from one or more *flue* connections and for discharging these gases through a single *flue* connection.

*Building area* means the greatest horizontal area of a *building* above *grade*,

- (a) within the outside surface of exterior walls, or
- (b) within the outside surface of exterior walls and the centre line of *firewalls*.

*Building Code website* means the website at [www.ontario.ca/buildingcode](http://www.ontario.ca/buildingcode).

*Building control valve* means the valve on a *water system* that controls the flow of *potable water* from the *water service pipe* to the *water distribution system*.

*Building drain* means the lowest horizontal piping, including any vertical *offset*, that conducts *sewage*, *clear water waste* or storm water by gravity to a *building sewer*.

*Building height* means the number of *storeys* contained between the roof and the floor of the *first storey*.

*Building sewer* means a *sanitary building sewer* or *storm building sewer*.

*Building trap* means a *trap* that is installed in a *sanitary building drain* or *sanitary building sewer* to prevent circulation of air between the *sanitary drainage system* and a public sewer.

*Business and personal services occupancy* means the *occupancy* or use of a *building* or part of a *building* for the transaction of business or the provision of professional or personal services.

*Camp for housing of workers* means a camp in which *buildings* or other structures or premises are used to accommodate five or more employees.

*Campground* means land or premises used as an overnight camping facility that is not a *recreational camp*.

*Canopy* means a roof-like structure projecting more than 300 mm from the exterior face of the *building*.

*Carbon dioxide equivalent* means a measure used to compare the impact of various greenhouse gases based on their global warming potential.

*Care and treatment occupancy* (Group B, Division 2) means an *occupancy* in which persons receive special care and treatment.

- †1 *Care occupancy* (Group B, Division 3) means an *occupancy* in which special care is provided by a facility, directly through its staff or indirectly through another provider, to residents of the facility,
- (a) who require special care because of cognitive or physical limitations, and

- (b) who, as a result of those limitations, would be incapable of evacuating the *occupancy*, if necessary, without the assistance of another person.

*Cavity wall* means a construction of masonry units laid with a cavity between the wythes, where the wythes are tied together with metal ties or bonding units and are relied on to act together in resisting lateral loads.

*Certificate for the occupancy of a building described in Sentence 1.3.3.4.(3) of Division C* means a certificate described in Sentence 3.7.4.3.(6) of Division C.

- 15 *Certificate for the occupancy of a building described in Sentence 1.3.3.5.(1) of Division C* means a certificate described in Sentence 3.7.4.3.(7) of Division C.

*Certificate for the occupancy of a building not fully completed* means a certificate described in Sentence 3.7.4.3.(5) of Division C.

*Chamber* means a structure that is constructed with an open bottom and that contains a pressurized *distribution pipe*.

*Check valve* means a valve that permits flow in only one direction and prevents a return flow.

*Chimney* means a shaft that is primarily vertical and that encloses at least one *flue* for conducting *flue* gases to the outdoors.

*Chimney liner* means a conduit containing a *chimney flue* used as a lining of a *masonry or concrete chimney*.

*Circuit vent* means a *vent pipe* that serves a number of *fixtures* and connects to the *fixture drain* of the most upstream *fixture*, and “*circuit vented*” has a corresponding meaning.

*Class 1 fire sprinkler/standpipe system* means an assembly of pipes and fittings that conveys water from the *water service pipe* or *fire service main* to the sprinkler/standpipe system’s outlets, is *directly connected* to the public water supply main only, has no pumps or reservoirs and in which the sprinkler drains discharge to the atmosphere, to dry wells or to other safe outlets.

*Class 2 fire sprinkler/standpipe system* means a *Class 1 fire sprinkler/standpipe system* that includes a booster pump in its connection to the public water supply main.

*Class 3 fire sprinkler/standpipe system* means an assembly of pipes and fittings that conveys *potable* water from the *water service pipe* or *fire service main* to the sprinkler/standpipe system’s outlets and that is *directly connected* to the public water supply main and to one or more of the following storage facilities, which are filled from the public water supply main only: elevated water storage, fire pumps supplying water from aboveground covered reservoirs or pressure tanks.

*Class 4 fire sprinkler/standpipe system* means an assembly of pipes and fittings that conveys water from the *water service pipe* or *fire service main* to the sprinkler/standpipe system’s outlets and is *directly connected* to the public water supply main (similar to *Class 1* and *Class 2 fire sprinkler/standpipe systems*) and to an auxiliary water supply dedicated to fire department use that is located within 520 m of a pumper connection.

*Class 5 fire sprinkler/standpipe system* means an assembly of pipes and fittings that conveys water from the *water service pipe* or *fire service main* to the sprinkler/standpipe system’s outlets, is *directly connected* to the public water supply main and is interconnected with an *auxiliary water supply*.

*Class 6 fire sprinkler/standpipe system* means an assembly of pipes and fittings that conveys water from the *water service pipe* or *fire service main* to the sprinkler/standpipe system’s outlets and acts as a combined industrial water supply and fire protection system that is supplied from the public water supply main only, with or without gravity storage or pump suction tanks.

*Cleanout* means a fitting access in a *drainage system* or *venting system* that is installed to provide access for cleaning and inspection and that is provided with a readily replaceable air tight cover.

*Clean water* means water that has passed through a *recirculation system*.

*Clear water waste* means waste water containing no impurities or contaminants that are harmful to a person’s health, plant or animal life or that impair the quality of the natural environment.

*Closed container* means a container so sealed by means of a lid or other device that neither liquid nor vapour will escape from it at ordinary temperatures.

*Closure* means a device or assembly for closing an opening through a *fire separation* or an exterior wall, such as a door, a shutter, wired glass and glass block, and includes all components such as hardware, closing devices, frames and anchors.

*Combustible* means that a material fails to meet the acceptance criteria of CAN/ULC-S114, “Test for Determination of Non-Combustibility in Building Materials”.

*Combustible construction* means a type of construction that does not meet the requirements for *noncombustible construction*.

*Combustible fibres* means finely divided combustible vegetable or animal fibres and thin sheets or flakes of such materials which, in a loose, unbaled condition, present a flash fire hazard, and includes cotton, wool, hemp, sisal, jute, kapok, paper and cloth.

*Combustible liquid* means any liquid having a *flash point* at or above 37.8°C and below 93.3°C.

*Compliance alternative* means a substitute for a requirement in another Part of Division B that is listed in Part 10 or 11 of Division B, and “C.A.” has a corresponding meaning.

*Compressed gas* means,

- (a) any contained mixture or material having a vapour pressure exceeding one or both of the following,
  - (i) 275.8 kPa (absolute) at 21°C, or
  - (ii) 717 kPa (absolute) at 54°C, or
- (b) any liquid having a vapour pressure exceeding 275.8 kPa (absolute) at 37.8°C.

*Computer room* means a room,

- (a) that contains electronic computer or data processing equipment such as main frame type,
- (b) that is separated from the remainder of the *building* for the purpose of controlling the air quality in the room by a self-contained climate control system, and
- (c) that has an *occupant load* of not more than one person for each 40 m<sup>2</sup> of the room.

*Conditioned space* means space within a *building* in which the temperature is controlled to limit variation in response to the exterior ambient temperature or interior differential temperatures by the provision, either directly or indirectly, of heating or cooling over substantial portions of the year.

*Construction index* means a level on a scale of 1 to 8 determined in accordance with Table 11.2.1.1.A. of Division B designating the expected *performance level* of the *building* structure with respect to the type of *construction* and fire protection of an existing *building*, and “C.I.” has a corresponding meaning.

*Contained use area* means a supervised area containing one or more rooms in which occupant movement is restricted to a single room by security measures not under the control of the occupant.

**r5** *Continuous vent* means a *vent pipe* that is an extension of a vertical section of a *branch* or *fixture drain*.

*Cooktop* means a cooking surface having one or more burners or heating elements.

*Critical level* means the level of submergence at which a *back-siphonage preventer* ceases to prevent *back-siphonage*.

*Dangerous goods* means those products or substances that are regulated by the *Transportation of Dangerous Goods Regulations* made under the *Transportation of Dangerous Goods Act, 1992* (Canada).

*Day camp* means a camp or resort that admits persons for a continuous period not exceeding 24 hours.

*Day nursery* means a day nursery as defined in the *Day Nurseries Act*.

*Dead end* means a pipe that terminates with a closed fitting.

*Dead load* means the weight of all permanent structural and nonstructural components of a *building*.

*Deep foundation* means a *foundation unit* that provides support for a *building* by transferring loads either by end-bearing to a *soil* or *rock* at considerable depth below the *building* or by adhesion or friction, or both, in the *soil* or *rock* in which it is placed. *Piles* are the most common type of *deep foundation*.

*Design activities* means the activities described in subsection 15.11(5) of the Act.

*Design bearing pressure* means the pressure applied by a *foundation unit* to *soil* or *rock*, which pressure is not greater than the *allowable bearing pressure*.

*Design capacity* means, in the definition of *sewage system*, the total daily design *sanitary sewage* flow determined in accordance with Article 8.2.1.3. of Division B.

*Designer* means the person responsible for the design.

*Design load* means the load applied to a *foundation unit*, which load is not greater than the *allowable load*.

*Detention occupancy* (Group B, Division 1) means an *occupancy* in which persons are under restraint or are incapable of self preservation because of security measures not under their control.

*Developed length* means, when applied to a pipe and fittings, the length along the centre line of the pipe and fittings.

*Directly connected* means physically connected in such a way that neither water nor gas can escape from the connection.

*Distilled beverage alcohol* means a beverage that is produced by fermentation and contains more than 20% by volume of water-miscible alcohol.

*Distillery* means a *process plant* where *distilled beverage alcohols* are produced, concentrated or otherwise processed, and includes facilities on the same site where the concentrated products may be blended, mixed, stored or packaged.

*Distributing pipe* means a pipe or piping in a *water distribution system*.

*Distribution box* means a device for ensuring that *effluent* from a *treatment unit* is distributed in equal amounts to each line of *distribution pipe* in a *leaching bed*.

*Distribution pipe* means a line or lines of perforated or open jointed pipe or tile installed in a *leaching bed* for the purpose of distributing *effluent* from a *treatment unit* to the *soil*, as defined in Part 8 of Division B, or *leaching bed fill* in the *leaching bed*.

*Diving board* means a flexible board.

*Diving platform* means a rigid platform that is not a *starting platform*.

*Drainage system* means an assembly of pipes, fittings, *fixtures* and appurtenances on a property that is used to convey *sewage* and *clear water waste* to a main sewer or a *private sewage disposal system*, and includes a *private sewer*, but does not include *subsoil drainage piping*.

*Drinking water system* has the same meaning as in subsection 2(1) of the *Safe Drinking Water Act, 2002*.

*Drum trap* means a *trap* whose inlet and outlet are in the sides of the cylindrical body of the *trap*.

*Dual vent* means a *vent pipe* that serves two *fixtures* and connects at the junction of the *trap arms*.

*Dwelling unit* means a *suite* operated as a housekeeping unit, used or intended to be used by one or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.

*Earth pit privy* means a latrine consisting of an excavation in the ground surmounted by a superstructure.

*Effluent* means *sanitary sewage* that has passed through a *treatment unit*.

*Electric space heating* means an electric energy source that provides more than 10 per cent of the heating capacity provided for a *building* and includes,

- (a) electric resistance unitary baseboard heating,
- (b) electric resistance unitary cabinet heating,
- (c) electric resistance ceiling cable or floor cable heating,
- (d) electric resistance central furnace heating,
- (e) electric hot water space heating, and
- (f) air source heat pumps in combination with electric resistance backup heating.

*Excavation* means the space created by the removal of *soil*, *rock* or *fill* for the purposes of construction.

*Exhaust duct* means a duct through which air is conveyed from a room or space to the outdoors.

*Exit* means that part of a *means of egress*, including doorways, that leads from the *floor area* it serves to a separate *building*, an open public thoroughfare or an exterior open space protected from fire exposure from the *building* and having access to an open public thoroughfare. (See Appendix A.)

Table 1.4.2.1.  
**Symbols and Abbreviations**  
 Forming Part of Sentence 1.4.2.1.(1)

Symbol or Abbreviation	Meaning
1 in 2	slope of 1 vertical to 2 horizontal
ABS	acrylonitrile-butadiene-styrene
ASWG	American Steel Wire Gage
Bq	becquerel(s)
CBOD <sub>5</sub>	the five day carbonaceous biochemical oxygen demand
cd	candela(s)
CFU	colony forming units
cm	centimetre(s)
cm <sup>2</sup>	square centimetre(s)
CO <sub>2</sub> e	<i>carbon dioxide equivalent</i>
CPVC	chlorinated poly (vinyl chloride)
dB(A)	A-weighted sound level
°	degree(s)
°C	Degree(s) Celsius
diam	diameter
DWV	drain, waste and vent
ft	foot (feet)
g	gram(s)
ga	gauge
gal	imperial gallon(s)
gal/min	imperial gallon(s) per minute
h	hour(s)
HVAC	heating, ventilating and air-conditioning
Hz	hertz
in.	inch(es)
J	joule(s)
kg	kilogram(s)
kg/m <sup>2</sup>	kilograms per square metre
kN	kilonewton(s)
kPa	kilopascal(s)
kW	kilowatt(s)
L	litre(s)
L/min	litre(s) per minute
L/s	litre(s) per second
LPF	litres per flush
lx	lux
m	metre(s)
m <sup>2</sup>	square metre(s)
m <sup>3</sup>	cubic metre(s)
m/s	metre(s) per second
max.	maximum
Column 1	2

Table 1.4.2.1. (Cont'd)  
 Symbols and Abbreviations  
 Forming Part of Sentence 1.4.2.1.(1)

Symbol or Abbreviation	Meaning
mg/L	milligram(s) per litre
min	minute(s)
min.	minimum
MJ	megajoule(s)
mm	millimetre(s)
MPa	megapascal(s)
N	newton
N/A	not applicable
ng	nanogram(s)
No.	number(s)
nom.	nominal
o.c.	on centre
OSB	oriented strandboard
Pa	pascal(s)
PB	polybutylene
PE	polyethylene
PE/AL/PE	polyethylene/aluminum/polyethylene
PEX	crosslinked polyethylene
PEX/AL/PEX	crosslinked polyethylene/aluminum/crosslinked polyethylene
PVC	poly (vinyl chloride)
RSI	thermal resistance, International System of Units
s	second(s)
temp.	temperature
T&G	tongue and groove
W	watt(s)
wt	weight
%	percent
µg	microgram(s)
µm	micron
Column 1	2

e<sub>1</sub>



# Division B

## Acceptable Solutions

### Part 1

#### General

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# Part 1

## General

### Section 1.1. General

#### 1.1.1. Application

##### 1.1.1.1. Application

- (1) This Part applies to all *buildings* covered in this Code.

#### 1.1.2. Climatic Data

##### 1.1.2.1. Climatic and Seismic Design Values

- (1) The climatic and seismic values required for the design of *buildings* under this Code shall be in conformance with the climatic and seismic values provided in MMAH Supplementary Standard SB-1, “Climatic and Seismic Data”.
- (2) The outside winter design temperatures determined from MMAH Supplementary Standard SB-1, “Climatic and Seismic Data”, shall be those listed for the January 2.5% values. (See Appendix A.)

##### 1.1.2.2. Depth of Frost Penetration

- (1) Depth of frost penetration shall be established on the basis of local experience.

### Section 1.2. Reserved

### Section 1.3. Referenced Documents and Organizations

#### 1.3.1. Referenced Documents

##### 1.3.1.1. Effective Date

- r5 (1) Unless otherwise specified in this Code, the documents referenced in this Code shall include all amendments, revisions and supplements effective to June 30, 2012.

### 1.3.1.2. Applicable Editions

(1) Where documents are referenced in this Code, they shall be in the editions designated in Column 2 of Table 1.3.1.2.

Table 1.3.1.2.  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
ACGIH	2013, 28th Edition	Industrial Ventilation Manual	6.2.1.1.(1) 6.2.2.4.(1)
AISI	S201-07	North American Standard for Cold Formed Steel Framing – Product Data	9.24.1.2.(1)
ANSI	A208.1-2009	Particleboard	Table 5.10.1.1. 9.23.14.2.(3) 9.29.9.1.(1) 9.30.2.2.(1)
ANSI/ASHRAE	62.1-2010	Ventilation for Acceptable Indoor Air Quality	6.2.2.1.(2) 6.2.3.8.(15)
ANSI/ASHRAE/ IESNA	90.1-2010	Energy Standard for Buildings Except Low-Rise Residential Buildings	6.2.1.1.(1)
ANSI/CSA	ANSI Z21.22-1999 / CSA 4.4-M99 (including Addenda 1 and 2)	Relief Valves for Hot Water Supply Systems	7.2.10.11.(1)
APHA/AWWA/ WEF	2012, 22nd Edition	Standard Methods for the Examination of Water and Waste Water	8.9.2.4.(1)(b)
ASHRAE	2013	Fundamentals	5.2.1.3.(1) 6.2.1.1.(1)
ASHRAE	2011	HVAC Applications	6.2.1.1.(1)
ASHRAE	2012	HVAC Systems and Equipment	6.2.1.1.(1)
ASHRAE	2014	Refrigeration	6.2.1.1.(1)
ASME	A112.19.8-2007	Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs	3.12.4.1.(9)
ASME	B16.3-2011	Malleable Iron Threaded Fittings: Classes 150 and 300	7.2.6.6.(1)
ASME	B16.4-2011	Gray Iron Threaded Fittings: Classes 125 and 250	7.2.6.5.(1) Table 7.2.11.2.
ASME	B16.12-2009	Cast Iron Threaded Drainage Fittings	7.2.6.3.(1)
ASME	B16.15-2011	Cast Copper Alloy Threaded Fittings: Classes 125 and 250	7.2.7.3.(1)
ASME	B16.18-2012	Cast Copper Alloy Solder Joint Pressure Fittings	7.2.7.6.(1) 7.2.7.6.(2) Table 7.2.11.2.
ASME	B16.22-2001	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings	7.2.7.6.(1) Table 7.2.11.2.
ASME	B16.23-2011	Cast Copper Alloy Solder Joint Drainage Fittings: DWV	7.2.7.5.(1)
ASME	B16.24-2011	Cast Copper Alloy Pipe Flanges and Flanged Fittings: Classes 150, 300, 600, 900, 1500 and 2500	7.2.7.2.(1)
ASME	B16.26-2011	Cast Copper Alloy Fittings for Flared Copper Tubes	7.2.7.7.(1) 7.2.7.7.(2) Table 7.2.11.2.
Column 1	2	3	4

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**Table 1.3.1.2. (Cont'd)**  
**Documents Referenced in the Building Code**  
**Forming Part of Sentence 1.3.1.2.(1)**

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
ASME	B16.29-2007	Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings - DWV	7.2.7.5.(1)
ASME	B18.6.1-1981	Wood Screws (Inch Series)	Table 5.10.1.1. 9.23.3.1.(3)
ASME/CSA	ASME A17.1-2010 / CSA B44-10	Safety Code for Elevators and Escalators	3.5.2.2.(1) Table 4.1.5.11. 7.4.3.6.(1)
ASME/CSA	ASME A112.18.1-2012 / CSA B125.1-12	Plumbing Supply Fittings	7.2.10.6.(1) 7.6.5.2.(1)
ASME/CSA	ASME A112.18.2-2011 / CSA B125.2-11	Plumbing Waste Fittings	7.2.3.3.(1) 7.2.10.6.(2)
ASME/CSA	ASME A112.19.1-2008 / CSA B45.2-08	Enamelled Cast Iron and Enamelled Steel Plumbing Fixtures	7.2.2.2.(3) 7.2.2.2.(4)
ASME/CSA	ASME A112.19.2-2008 / CSA B45.1-08	Ceramic Plumbing Fixtures	7.2.2.2.(2)
ASME/CSA	ASME A112.19.3-2008 / CSA B45.4-08	Stainless Steel Plumbing Fixtures	7.2.2.2.(5)
ASME/CSA	ASME A112.19.7-2012 / CSA B45.10-12	Hydromassage Bathtub Systems	7.2.2.2.(7)
ASPE	2005	Data Books	7.6.3.1.(2) 7.7.4.1.(1)
ASSE	ANSI/ASSE 1010-2004	Water Hammer Arresters	7.2.10.15.(1)
ASSE	1051-2009	Individual and Branch Type Air Admittance Valves for Sanitary Drainage Systems	7.2.10.16.(1)
ASTM	A53 / A53M-10	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless	7.2.6.7.(4)
ASTM	A123 / A123M-09	Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products	Table 5.10.1.1. Table 9.20.16.1.
ASTM	A153 / A153M-09	Zinc Coating (Hot-Dip) on Iron and Steel Hardware	Table 5.10.1.1. Table 9.20.16.1.
ASTM	A252-10	Welded and Seamless Steel Pipe Piles	4.2.3.8.(1)
ASTM	A283 / A283M-03	Low and Intermediate Tensile Strength Carbon Steel Plates	4.2.3.8.(1)
ASTM	A518 / A518M-99	Corrosion-Resistant High-Silicon Iron Castings	7.2.8.1.(1)
ASTM	A653 / A653M-11	Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process	Table 5.10.1.1. 9.3.3.2.(1)
ASTM	A792 / A792M-10	Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process	9.3.3.2.(1)
ASTM	A1008 / A1008M-11	Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable	4.2.3.8.(1)
ASTM	A1011 / A1011M-10	Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength	4.2.3.8.(1)
ASTM	B32-08	Solder Metal	7.2.9.2.(2)
ASTM	B42-10	Seamless Copper Pipe, Standard Sizes	7.2.7.1.(1)
ASTM	B43-09	Seamless Red Brass Pipe, Standard Sizes	7.2.7.1.(2)
Column 1	2	3	4

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Table 1.3.1.2. (Cont'd)  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
ASTM	B68 / B68M-11	Seamless Copper Tube, Bright Annealed	7.2.7.4.(3)
ASTM	B88-09	Seamless Copper Water Tube	7.2.7.4.(1) 7.2.7.4.(3) Table 7.2.11.2.
ASTM	B306-09	Copper Drainage Tube (DWV)	7.2.7.4.(1)
ASTM	B813-10	Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube	7.2.9.2.(3)
ASTM	B828-02	Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings	7.3.2.4.(1)
ASTM	C4-04	Clay Drain Tile and Perforated Clay Drain Tile	Table 5.10.1.1. 9.14.3.1.(1)
ASTM	C27-98	Classification for Fire Clay and High-Alumina Refractory Brick	9.21.3.4.(1)
ASTM	C73-10	Calcium Silicate Brick (Sand-Lime Brick)	Table 5.10.1.1. 9.20.2.1.(1)
ASTM	C126-11	Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units	Table 5.10.1.1. 9.20.2.1.(1)
ASTM	C212-10	Structural Clay Facing Tile	Table 5.10.1.1. 9.20.2.1.(1)
ASTM	C260 / 260M-10a	Air-Entraining Admixtures for Concrete	9.3.1.8.(1)
ASTM	C411-11	Hot-Surface Performance of High-Temperature Thermal Insulation	6.2.3.4.(3) 6.2.9.2.(2)
ASTM	C412M-11	Concrete Drain Tile (Metric)	Table 5.10.1.1. 9.14.3.1.(1)
ASTM	C444M-03	Perforated Concrete Pipe (Metric)	Table 5.10.1.1. 9.14.3.1.(1)
ASTM	C494 / C494M-11	Chemical Admixtures for Concrete	9.3.1.8.(1)
ASTM	C553-11	Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications	Table 5.10.1.1.
ASTM	C612-10	Mineral Fiber Block and Board Thermal Insulation	Table 5.10.1.1.
ASTM	C700-11	Vitrified Clay Pipe, Extra Strength, Standard Strength and Perforated	Table 5.10.1.1. 9.14.3.1.(1)
ASTM	C834-10	Latex Sealants	Table 5.10.1.1. 9.27.4.2.(2)
ASTM	C920-11	Elastomeric Joint Sealants	Table 5.10.1.1. 9.27.4.2.(2)
ASTM	C954-11	Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness	9.24.1.4.(1)
ASTM	C991-08e1	Flexible Fibrous Glass Insulation for Metal Buildings	Table 5.10.1.1.
ASTM	C1002-07	Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs	Table 5.10.1.1. 9.24.1.4.(1) 9.29.5.7.(1)
ASTM	C1053-00	Borosilicate Glass Pipe and Fittings for Drain, Waste and Vent (DWV) Applications	7.2.8.1.(1)
ASTM	C1177 / C1177M-08	Glass Mat Gypsum Substrate for Use as Sheathing	Table 5.10.1.1. Table 9.23.16.2.A.
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**Table 1.3.1.2. (Cont'd)**  
**Documents Referenced in the Building Code**  
**Forming Part of Sentence 1.3.1.2.(1)**

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
ASTM	C1178 / C1178M-11	Coated Glass Mat Water-Resistant Gypsum Backing Panel	Table 5.10.1.1. 9.29.5.2.(1)
ASTM	C1184-05	Structural Silicone Sealants	Table 5.10.1.1. 9.27.4.2.(2)
ASTM	C1311-10	Solvent Release Sealants	Table 5.10.1.1. 9.27.4.2.(2)
ASTM	C1330-02	Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants	Table 5.10.1.1. 9.27.4.2.(3)
ASTM	C1396 / C1396M-11	Gypsum Board	3.1.5.12.(4) Table 5.10.1.1. Table 9.23.16.2.A. 9.29.5.2.(1) Table 9.29.5.3.
ASTM	D323-08	Vapor Pressure of Petroleum Products (Reid Method)	1.4.1.2.(1) of Division A
ASTM	D374-99	Thickness of Solid Electrical Insulation	3.15.4.1.(1)
ASTM	D568-77	Rate of Burning and/or Extent and Time of Burning of Flexible Plastics in a Vertical Position	3.15.4.1.(1)
ASTM	D635-06	Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position	3.15.4.1.(1)
ASTM	D2178-04	Asphalt Glass Felt Used in Roofing and Waterproofing	Table 5.10.1.1.
ASTM	D2898-10	Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing	3.1.5.5.(4); 3.1.5.25.(1) 3.2.3.7.(5); 3.2.3.7.(7)
ASTM	D3261-10a	Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing	7.2.5.5.(3)
ASTM	E90-04	Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements	5.9.1.1.(1) 9.11.1.1.(1)
ASTM	E96 / E96M-10	Water Vapour Transmission of Materials	5.5.1.2.(3) 9.25.4.2.(1) 9.25.5.1.(1)
ASTM	E336-05	Measurement of Airborne Sound Attenuation Between Rooms in Buildings	5.9.1.1.(1) 9.11.1.1.(1)
ASTM	E413-04	Classification for Rating Sound Insulation	5.9.1.1.(1) 9.11.1.1.(1)
ASTM	E2190-10	Insulating Glass Unit Performance and Evaluation	Table 5.10.1.1. 9.6.1.2.(1)
ASTM	F476-84	Security of Swinging Door Assemblies	9.7.5.2.(2)
ASTM	F628-08	Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe With a Cellular Core	7.2.5.10.(1) 7.2.5.12.(1) 7.2.5.12.(2)
ASTM	F714-10	Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter	7.2.5.6.(1)
ASTM	F1667-05	Driven Fasteners: Nails, Spikes and Staples	9.23.3.1.(1) 9.26.2.2.(1) 9.29.5.6.(1)
AWPA	M4-11	Care of Preservative-Treated Wood Products	Table 5.10.1.1.
AWS	ANSI/AWS A5.8M / A5.8: 2011	Specification for Filler Metals for Brazing and Braze Welding	7.2.9.2.(4)
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Table 1.3.1.2. (Cont'd)  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
AWWA	ANSI/AWWA C104 / A21.4-2008	Cement-Mortar Lining for Ductile-Iron Pipe and Fittings	7.2.6.4.(2) Table 7.2.11.2.
AWWA	ANSI/AWWA C110 / A21.10-2012	Ductile-Iron and Gray-Iron Fittings	7.2.6.4.(3) Table 7.2.11.2.
AWWA	ANSI/AWWA C111 / A21.11-2012	Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings	7.2.6.4.(4) Table 7.2.11.2.
AWWA	ANSI/AWWA C151 / A21.51-2009	Ductile-Iron Pipe, Centrifugally Cast	7.2.6.4.(1) Table 7.2.11.2.
BCMOH	Version 2, 21st Sept, 2007	Sewerage System Standard Practice Manual	8.7.8.3.(2) 8.7.8.3.(3)
BNQ	BNQ 3624-115-2007	Polyethylene (PE) Pipe and Fittings - Flexible Pipes for Drainage - Characteristics and Test Methods	Table 5.10.1.1. 9.14.3.1.(1)
BNQ	CAN/BNQ 3680-600-2009	Onsite Residential Wastewater Treatment Technologies	8.6.2.2.(5) Table 8.6.2.2.
CCBFC	NRCC 38726 1995	National Building Code of Canada	1.3.1.2.(3) of Division A
CCBFC	NRCC 38730 1997	Model National Energy Code of Canada for Buildings	6.2.1.1.(1)
CCBFC	NRCC 38732 1995	National Farm Building Code of Canada	1.3.1.2.(1) to (5) of Division A
CCBFC	NRCC 53301 2010	National Building Code of Canada	2.4.2.1.(2) of Division C
CCBFC	NRCC 53302 2010	National Plumbing Code of Canada	2.4.2.1.(2) of Division C
CCBFC	NRCC 53303 2010	National Fire Code of Canada	3.3.1.2.(1) 3.3.5.2.(1) 6.2.2.5.(1)
CCBFC	NRCC 54435 2011	National Energy Code of Canada for Buildings	6.2.1.1.(1)
CGSB	CAN/CGSB-1.501-M89	Method of Permeance of Coated Wallboard	5.5.1.2.(2) 9.25.4.2.(5)
CGSB	CAN/CGSB-7.2-94	Adjustable Steel Columns	9.17.3.4.(1)
CGSB	CAN/CGSB-10.3-92	Air Setting Refractory Mortar	9.21.3.4.(2) 9.21.3.9.(1) 9.22.2.2.(2)
CGSB	CAN/CGSB-11.3-M87	Hardboard	Table 5.10.1.1. 9.27.9.1.(2) 9.29.7.1.(1) 9.30.2.2.(1)
CGSB	CAN/CGSB-11.5-M87	Hardboard, Precoated, Factory Finished, for Exterior Cladding	Table 5.10.1.1. 9.27.9.1.(1)
CGSB	CAN/CGSB-12.1-M90	Tempered or Laminated Safety Glass	3.3.1.19.(2) 3.4.6.15.(1) 3.4.6.15.(3) Table 5.10.1.1. 9.6.1.2.(2) 9.6.1.4.(1) 9.8.8.7.(1)
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**Table 1.3.1.2. (Cont'd)**  
**Documents Referenced in the Building Code**  
**Forming Part of Sentence 1.3.1.2.(1)**

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
CGSB	CAN/CGSB-12.2-M91	Flat, Clear Sheet Glass	Table 5.10.1.1. 9.6.1.2.(1)
CGSB	CAN/CGSB-12.3-M91	Flat, Clear Float Glass	Table 5.10.1.1. 9.6.1.2.(1)
CGSB	CAN/CGSB-12.4-M91	Heat Absorbing Glass	Table 5.10.1.1. 9.6.1.2.(1)
CGSB	CAN/CGSB-12.5-M86	Mirrors, Silvered	Table 5.10.1.1. 9.6.1.2.(3)
CGSB	CAN/CGSB-12.8-97	Insulating Glass Units	Table 5.10.1.1. 9.6.1.2.(1)
CGSB	CAN/CGSB-12.10-M76	Glass, Light and Heat Reflecting	Table 5.10.1.1. 9.6.1.2.(1)
CGSB	CAN/CGSB-12.11-M90	Wired Safety Glass	3.3.1.19.(2) 3.4.6.15.(1) 3.4.6.15.(3) Table 5.10.1.1. 9.6.1.2.(2) 9.6.1.4.(1) 9.8.8.7.(1)
CGSB	CAN/CGSB-12.20-M89	Structural Design of Glass for Buildings	4.3.6.1.(1) 9.6.1.3.(1)
CGSB	CAN/CGSB-19.22-M89	Mildew Resistant Sealing Compound for Tubs and Tile	9.29.10.5.(1)
CGSB	CAN/CGSB-34.9-M94	Asbestos-Cement Sewer Pipe	7.2.5.1.(2)
CGSB	CAN/CGSB-34.22-94	Asbestos-Cement Drain Pipe	Table 5.10.1.1. 7.2.5.1.(1) 9.14.3.1.(1)
CGSB	CAN/CGSB-34.23-94	Asbestos-Cement House Connection Sewer Pipe	7.2.5.1.(2)
CGSB	CAN/CGSB-37.1-M89	Chemical Emulsified Type, Emulsified Asphalt for Dampproofing	Table 5.10.1.1. 9.13.2.2.(1)
CGSB	CAN/CGSB-37.2-M88	Emulsified Asphalt, Mineral Colloid Type, Unfilled, for Dampproofing and Waterproofing and for Roof Coatings	Table 5.10.1.1. 9.13.2.2.(1) 9.13.3.2.(1)
CGSB	CAN/CGSB-37.3-M89	Application of Emulsified Asphalts for Dampproofing or Waterproofing	5.8.2.3.(1) Table 5.10.1.1. 9.13.2.3.(1) 9.13.3.3.(1)
CGSB	CAN/CGSB-37.4-M89	Fibrated, Cutback Asphalt, Lap Cement for Asphalt Roofing	Table 5.10.1.1. 9.26.2.1.(1)
CGSB	CAN/CGSB-37.5-M89	Cutback Asphalt Plastic Cement	Table 5.10.1.1. 9.26.2.1.(1)
CGSB	37-GP-6Ma-1983	Asphalt, Cutback, Unfilled, for Dampproofing	5.8.2.2.(6) 5.8.2.2.(7) Table 5.10.1.1. 9.13.2.2.(1)
CGSB	CAN/CGSB-37.8-M88	Asphalt, Cutback, Filled, for Roof Coating	Table 5.10.1.1. 9.26.2.1.(1)
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Table 1.3.1.2. (Cont'd)  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
CGSB	37-GP-9Ma-1983	Primer, Asphalt, Unfilled, for Asphalt Roofing, Dampproofing and Waterproofing	Table 5.10.1.1. 9.26.2.1.(1)
CGSB	37-GP-12Ma-1984	Application of Unfilled Cutback Asphalt for Dampproofing	5.8.2.3.(2) Table 5.10.1.1. 9.13.2.3.(1)
CGSB	CAN/CGSB-37.16-M89	Filled, Cutback Asphalt for Dampproofing and Waterproofing	Table 5.10.1.1. 9.13.2.2.(1) 9.13.3.2.(1)
CGSB	37-GP-18Ma-1985	Tar, Cutback, Unfilled, for Dampproofing	5.8.2.2.(6) 5.8.2.2.(7) Table 5.10.1.1. 9.13.2.2.(1)
CGSB	37-GP-21M-1985	Tar, Cutback, Fibrated, For Roof Coating	Table 5.10.1.1. 9.26.2.1.(1)
CGSB	CAN/CGSB-37.22-M89	Application of Unfilled, Cutback Tar Foundation Coating for Dampproofing	5.8.2.3.(2) Table 5.10.1.1. 9.13.2.3.(1)
CGSB	37-GP-36M-1976	Application of Filled Cutback Asphalt for Dampproofing and Waterproofing	5.8.2.3.(1) Table 5.10.1.1.
CGSB	37-GP-37M-1977	Application of Hot Asphalt for Dampproofing or Waterproofing	5.8.2.3.(1) Table 5.10.1.1.
CGSB	CAN/CGSB-37.50-M89	Hot Applied, Rubberized Asphalt for Roofing and Waterproofing	Table 5.10.1.1. 9.26.2.1.(1)
CGSB	CAN/CGSB-37.51-M90	Application for Hot Applied Rubberized Asphalt for Roofing and Waterproofing	5.6.1.2.(1) 5.8.2.3.(1) Table 5.10.1.1. 9.26.15.1.(1)
CGSB	37-GP-52M-1984	Roofing and Waterproofing Membrane, Sheet Applied, Elastomeric	Table 5.10.1.1. 9.26.2.1.(1)
CGSB	CAN/CGSB-37.54-95	Polyvinyl Chloride Roofing and Waterproofing Membrane	Table 5.10.1.1. 9.26.2.1.(1)
CGSB	37-GP-55M-1979	Application of Sheet Applied Flexible Polyvinyl Chloride Roofing Membrane	5.6.1.2.(1) Table 5.10.1.1. 9.26.16.1.(1)
CGSB	37-GP-56M-1985	Membrane, Modified, Bituminous, Prefabricated, and Reinforced for Roofing	Table 5.10.1.1. 9.13.2.2.(1) 9.13.3.2.(1) 9.26.2.1.(1)
CGSB	37-GP-64M-1977	Mat Reinforcing, Fibrous Glass, for Membrane Waterproofing Systems and Built-up Roofing	Table 5.10.1.1.
CGSB	41-GP-6M-1983	Sheets, Thermosetting Polyester Plastics, Glass Fiber Reinforced	Table 5.10.1.1. 9.26.2.1.(1)
CGSB	CAN/CGSB-41.24-95	Rigid Vinyl Siding, Soffits and Fascia	Table 5.10.1.1. 9.27.12.1.(1)
CGSB	CAN/CGSB-51.25-M87	Thermal Insulation, Phenolic, Faced	Table 9.23.16.2.A. 9.25.2.2.(1)
CGSB	51-GP-27M-1979	Thermal Insulation, Polystyrene, Loose Fill	9.25.2.2.(1)
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**Table 1.3.1.2. (Cont'd)**  
**Documents Referenced in the Building Code**  
**Forming Part of Sentence 1.3.1.2.(1)**

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
CGSB	CAN/CGSB-51.32-M77	Sheathing, Membrane, Breather Type	Table 5.10.1.1. 9.20.13.9.(1) 9.26.2.1.(1) 9.27.3.2.(1)
CGSB	CAN/CGSB-51.33-M89	Vapour Barrier, Sheet, Excluding Polyethylene, for Use in Building Construction	Table 5.10.1.1. 9.25.4.2.(4)
CGSB	CAN/CGSB-51.34-M86 (amended 1988)	Vapour Barrier, Polyethylene Sheet for Use in Building Construction	Table 5.10.1.1. 9.13.2.2.(1) 9.13.4.2.(1) 9.18.6.2.(1) 9.25.3.2.(2) 9.25.3.6.(1) 9.25.4.2.(3)
CGSB	CAN/CGSB-82.6-M86	Doors, Mirrored Glass, Sliding or Folding, Wardrobe	9.6.1.2.(2)
CGSB	CAN/CGSB-93.1-M85	Sheet, Aluminum Alloy, Prefinished Residential	Table 5.10.1.1. 9.27.11.1.(4)
CGSB	CAN/CGSB-93.2-M91	Prefinished Aluminum Siding, Soffits and Fascia for Residential Use	3.2.3.6.(4) Table 5.10.1.1. 9.10.14.5.(8) 9.10.14.5.(11) 9.10.15.5.(7) 9.10.15.5.(10) 9.27.11.1.(3)
CGSB	CAN/CGSB-93.3-M91	Prefinished Galvanized and Aluminum-Zinc Alloy Steel Sheet for Residential Use	Table 5.10.1.1. 9.27.11.1.(2)
CGSB	CAN/CGSB-93.4-92	Galvanized Steel and Aluminum-Zinc Alloy Coated Steel Siding, Soffits and Fascia, Prefinished, Residential	Table 5.10.1.1. 9.27.11.1.(1)
CSA	CAN/CSA-6.19-01	Residential Carbon Monoxide Alarming Devices	6.2.12.3.(1) 9.33.4.3.(1)
CSA	A23.1-09	Concrete Materials and Methods of Concrete Construction	4.2.3.6.(1) 4.2.3.9.(1) Table 5.10.1.1. 9.3.1.1.(1) 9.3.1.1.(4) 9.3.1.3.(1) 9.3.1.4.(1) 9.39.1.4.(1)
CSA	CAN/CSA-A23.3-04	Design of Concrete Structures	Table 4.1.8.9. 4.3.3.1.(1)
CSA	A60.1-M1976	Vitrified Clay Pipe	7.2.5.4.(1)
CSA	A60.3-M1976	Vitrified Clay Pipe Joints	7.2.5.4.(2)
CSA	CAN/CSA-A82.1-M87	Burned Clay Brick (Solid Masonry Units Made From Clay or Shale)	Table 5.10.1.1. 9.20.2.1.(1)
CSA	A82.4-M1978	Structural Clay Load-Bearing Wall Tile	Table 5.10.1.1. 9.20.2.1.(1)
CSA	A82.5-M1978	Structural Clay Non-Load-Bearing Tile	Table 5.10.1.1. 9.20.2.1.(1)
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Table 1.3.1.2. (Cont'd)  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
CSA	CAN3-A82.8-M78	Hollow Clay Brick	Table 5.10.1.1. 9.20.2.1.(1)
CSA	CAN/CSA-A82.27-M91	Gypsum Board	3.1.5.12.(4) Table 5.10.1.1. Table 9.23.16.2.A. 9.29.5.2.(1)
CSA	A82.30-M1980	Interior Furring, Lathing and Gypsum Plastering	Table 5.10.1.1. 9.29.4.1.(1)
CSA	A82.31-M1980	Gypsum Board Application	3.2.3.6.(4) Table 5.10.1.1. 9.10.12.4.(3) 9.29.5.1.(2)
CSA	CAN3-A93-M82	Natural Airflow Ventilators for Buildings	Table 5.10.1.1. 9.19.1.2.(5)
CSA	A123.1-05 / A123.5-05	Asphalt Shingles Made from Organic Felt and Surfaced with Mineral Granules / Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules	Table 5.10.1.1. 9.26.2.1.(1)
CSA	CAN/CSA-A123.2-03	Asphalt Coated Roofing Sheets	Table 5.10.1.1. 9.26.2.1.(1)
CSA	A123.3-05	Asphalt Saturated Organic Roofing Felt	Table 5.10.1.1. 9.26.2.1.(1)
CSA	CAN/CSA-A123.4-04	Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems	Table 5.10.1.1. 9.13.2.2.(1) 9.13.3.2.(1) 9.26.2.1.(1)
CSA	A123.17-05	Asphalt Glass Felt Used in Roofing and Waterproofing	Table 5.10.1.1. 9.26.2.1.(1)
CSA	CAN3-A123.51-M85	Asphalt Shingle Application on Roof Slopes 1:3 and Steeper	5.6.1.2.(1) Table 5.10.1.1. 9.26.1.2.(1)
CSA	CAN3-A123.52-M85	Asphalt Shingle Application on Roof Slopes 1:6 to Less than 1:3	5.6.1.2.(1) Table 5.10.1.1. 9.26.1.2.(1)
CSA	CAN/CSA-A165.1-04	Concrete Block Masonry Units	Table 5.10.1.1. 9.15.2.2.(1) 9.17.5.1.(1) 9.20.2.1.(1) 9.20.2.6.(1)
CSA	CAN/CSA-A165.2-04	Concrete Brick Masonry Units	Table 5.10.1.1. 9.20.2.1.(1)
CSA	CAN/CSA-A165.3-04	Prefaced Concrete Masonry Units	Table 5.10.1.1. 9.20.2.1.(1)
CSA	CAN3-A165.4-M85	Autoclaved Cellular Units	Table 5.10.1.1. 9.20.2.1.(1)
CSA	CAN/CSA-A179-04	Mortar and Grout for Unit Masonry	Table 5.10.1.1. 9.15.2.2.(3) 9.20.3.1.(1)
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**Table 1.3.1.2. (Cont'd)**  
**Documents Referenced in the Building Code**  
**Forming Part of Sentence 1.3.1.2.(1)**

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
CSA	CAN/CSA-A220.0-06	Performance of Concrete Roof Tiles	Table 5.10.1.1. 9.26.2.1.(1)
CSA	CAN/CSA-A220.1-06	Installation of Concrete Roof Tiles	Table 5.10.1.1. 9.26.17.1.(1)
CSA	CAN/CSA-A257 Series-09	Standards for Concrete Pipe and Manhole Sections	7.2.5.3.(1)
CSA	CAN/CSA-A257.4-09	Precast Reinforced Circular Concrete Manhole Sections, Catch Basins, and Fittings	7.2.5.3.(5)
CSA	A277-08	Procedure for Factory Certification of Buildings	9.1.1.9.(1) 3.1.1.1.(2) of Division C 3.2.4.1.(3) of Division C
CSA	CAN/CSA-A324-M88	Clay Flue Liners	9.21.3.3.(1)
CSA	CAN/CSA-A371-04	Masonry Construction for Buildings	5.6.1.2.(2) Table 5.10.1.1. 9.15.2.2.(3) 9.20.3.2.(7) 9.20.15.2.(1)
CSA	CAN/CSA-A405-M87	Design and Construction of Masonry Chimneys and Fireplaces	9.21.3.5.(1) 9.22.1.4.(7) 9.22.5.2.(2)
CSA	AAMA/WDMA/CSA 101/I.S.2/A440-11	NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights	5.10.2.2.(1); Table 9.7.3.3. 9.7.4.1.(1); 9.7.4.2.(1) 9.7.4.3.(2); 9.7.5.1.(1) 9.7.5.3.(1)
CSA	A440.2-09 / A440.3-09	Fenestration Energy Performance / User Guide to CSA A440.2-09, Fenestration Energy Performance	Table 9.7.3.3. 12.3.1.2.(1)
CSA	CAN/CSA-A440.4-07	Window, Door and Skylight Installation	9.7.6.1.(1)
CSA	A440S1-09	Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights	5.10.2.2.(1) 9.7.4.2.(1) 9.7.4.3.(1)
CSA	A660-10	Certification of Manufacturers of Steel Building Systems	4.3.4.3.(1)
CSA	CAN/CSA-A3001-08	Cementitious Materials for Use in Concrete	Table 5.10.1.1. 9.3.1.2.(1) 9.28.2.1.(1)
CSA	CAN/CSA-B45.0-02	General Requirements for Plumbing Fixtures	7.6.4.2.(1)
CSA	CAN/CSA-B45.9-02	Macerating Systems and Related Components	7.2.2.2.(8)
CSA	B52-05	Mechanical Refrigeration Code	6.2.2.4.(4)
CSA	B64.0-11	Definitions, General Requirements, and Test Methods for Vacuum Breakers and Backflow Preventers	7.2.10.10.(1)
CSA	B64.1.1-11	Atmospheric Vacuum Breakers (AVB)	7.2.10.10.(1)
CSA	B64.1.2-11	Pressure Vacuum Breakers (PVB)	7.2.10.10.(1)
CSA	B64.1.3-11	Spill-resistant Pressure Vacuum Breakers (SRPVB)	7.2.10.10.(1)
CSA	B64.1.4-11	Vacuum Breaker, Air Space Type (ASVB)	7.2.10.10.(1)
CSA	B64.2-11	Hose Connection Vacuum Breakers (HCVB)	7.2.10.10.(1)
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Table 1.3.1.2. (Cont'd)  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
CSA	B64.2.1-11	Hose Connection Vacuum Breakers (HCVB) with Manual Draining Feature	7.2.10.10.(1)
CSA	B64.2.1.1-11	Hose Connection Dual Check Vacuum Breakers (HCDVB)	7.2.10.10.(1)
CSA	B64.2.2-11	Hose Connection Vacuum Breakers (HCVB) with Automatic Draining Feature	7.2.10.10.(1)
CSA	B64.3-11	Dual Check Valve Backflow Preventers with Atmospheric Port (DCAP)	7.2.10.10.(1) 7.6.2.5.(4)
CSA	B64.3.1-11	Dual Check Valve Backflow Preventers with Atmospheric Port for Carbonators (DCAPC)	7.2.10.10.(1)
CSA	B64.4-11	Reduced Pressure Principle (RP) Backflow Preventers	7.2.10.10.(1)
CSA	B64.4.1-11	Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)	7.6.2.4.(2) Table 7.6.2.4. 7.6.2.4.(4)
CSA	B64.5-11	Double Check Valve (DCVA) Backflow Preventers	7.2.10.10.(1)
CSA	B64.5.1-11	Double Check Valve Backflow Preventers for Fire Protection Systems (DCVAF)	7.6.2.4.(2) Table 7.6.2.4.
CSA	B64.6-11	Dual Check Valve (DuC) Backflow Preventers	7.2.10.10.(1) 7.6.2.6.(3) 7.7.1.1.(3)
CSA	B64.6.1-11	Dual Check Valve Backflow Preventers for Fire Protection Systems (DuCF)	7.6.4.2.(2) Table 7.6.2.4.
CSA	B64.7-11	Laboratory Faucet Vacuum Breakers (LFVB)	7.2.10.10.(1)
CSA	B64.8-11	Dual Check Valve Backflow Preventers with Intermediate Vent (DuCV)	7.2.10.10.(1)
CSA	B64.9-11	Single Check Valve Backflow Preventers for Fire Protection Systems (SCVAF)	7.6.2.4.(2) Table 7.6.2.4.
CSA	B64.10-11	Selection and Installation of Backflow Preventers	7.2.10.10.(1); 7.6.2.3.(1) Table 7.6.2.4.; 7.6.2.6.(1)
CSA	B66-10	Design, Material, and Manufacturing Requirements for Prefabricated Septic Tanks and Sewage Holding Tanks	8.2.2.2.(1); 8.2.2.2.(2) 8.2.2.2.(3); 8.2.2.3.(7) 8.2.2.3.(11)
CSA	B70-12	Cast Iron Soil Pipe, Fittings and Means of Joining	7.2.6.1.(1) 7.4.6.4.(2)
CSA	B111-1974	Wire Nails, Spikes and Staples	9.23.3.1.(1) 9.26.2.2.(1) 9.29.5.6.(1)
CSA	B125.3-12	Plumbing Fittings	7.2.10.6.(1) 7.2.10.10.(2) 7.6.5.2.(2)
CSA	CAN/CSA-B127.1-99	Asbestos Cement Drain, Waste and Vent Pipe and Pipe Fittings	7.2.5.1.(1) 7.2.6.2.(1)
CSA	B127.2-M1977	Components for Use in Asbestos Cement Building Sewer Systems	7.2.5.1.(2) 7.2.6.2.(1)
CSA	CAN/CSA-B128.1-06	Design and Installation of Non-Potable Water Systems	7.7.2.1.(2) 7.7.4.1.(1)
CSA	CAN/CSA-B137.1-09	Polyethylene (PE) Pipe, Tubing and Fittings for Cold Water Pressure Services	7.2.5.5.(1) Table 7.2.11.2.
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**Table 1.3.1.2. (Cont'd)**  
**Documents Referenced in the Building Code**  
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Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
CSA	CAN/CSA-B137.2-09	Polyvinylchloride (PVC) Injection-Moulded Gasketed Fittings for Pressure Applications	7.2.5.8.(1) 7.2.5.10.(1) Table 7.2.11.2.
CSA	CAN/CSA-B137.3-09	Rigid Polyvinylchloride (PVC) Pipe for Pressure Applications	7.2.5.8.(1) 7.2.5.10.(1) Table 7.2.11.2.
CSA	CAN/CSA-B137.5-09	Crosslinked Polyethylene (PEX) Tubing Systems for Pressure Applications	7.2.5.7.(1) Table 7.2.11.2.
CSA	CAN/CSA-B137.6-09	Chlorinated Polyvinylchloride (CPVC) Pipe, Tubing and Fittings for Hot and Cold Water Distribution Systems	7.2.5.9.(1) 7.2.5.9.(2) Table 7.2.11.2.
CSA	CAN/CSA-B137.9-09	Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure-Pipe Systems	7.2.5.13.(1) Table 7.2.11.2.
CSA	CAN/CSA-B137.10-09	Crosslinked Polyethylene/Aluminum Crosslinked Polyethylene (PEX-AL-PEX) Composite Pressure-Pipe Systems	7.2.5.13.(4) 7.2.5.14.(1) Table 7.2.11.2.
CSA	CAN/CSA-B137.11-09	Polypropylene (PP-R) Pipe and Fittings for Pressure Applications	7.2.5.15.(1)
CSA	B158.1-1976	Cast Brass Solder Joint Drainage, Waste and Vent Fittings	7.2.7.5.(1) 7.2.10.1.(1)
CSA	CAN/CSA-B181.1-11	Acrylonitrile-Butadiene-Styrene (ABS) Drain, Waste, and Vent Pipe and Pipe Fittings	7.2.5.10.(1) 7.2.5.11.(1) 7.2.5.12.(1) 7.2.5.12.(2) 7.2.10.1.(2) 7.4.6.4.(2)
CSA	CAN/CSA-B181.2-11	Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Drain, Waste, and Vent Pipe and Pipe Fittings	7.2.5.10.(1) 7.2.5.11.(1) 7.2.5.12.(1) 7.2.5.12.(2) 7.2.10.1.(3) 7.4.6.4.(2)
CSA	CAN/CSA-B181.3-11	Polyolefin and Polyvinylidene Fluoride (PVDF) Laboratory Drainage Systems	7.2.8.1.(1)
CSA	CAN/CSA-B182.1-11	Plastic Drain and Sewer Pipe and Pipe Fittings	Table 5.10.1.1. 7.2.5.10.(1) 7.2.5.12.(2) 7.4.6.4.(2) 9.14.3.1.(1)
CSA	CAN/CSA-B182.2-11	PSM Type Polyvinylchloride (PVC) Sewer Pipe and Fittings	7.2.5.10.(1) 7.2.5.12.(2)
CSA	CAN/CSA-B182.4-11	Profile Polyvinylchloride (PVC) Sewer Pipe and Fittings	7.2.5.10.(1)
CSA	CAN/CSA-B182.6-11	Profile Polyethylene (PE) Sewer Pipe and Fittings for Leak-Proof Sewer Applications	7.2.5.10.(1)
CSA	CAN/CSA-B214-12	Installation Code for Hydronic Heating Systems	6.2.1.4.(6)
CSA	B242-05	Groove and Shoulder-Type Mechanical Pipe Couplings	7.2.10.4.(1)
CSA	CAN/CSA-B272-93	Prefabricated Self-Sealing Roof Vent Flashings	7.2.10.14.(2)
CSA	B355-09	Lifts for Persons with Physical Disabilities	3.8.3.5.(1)
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Table 1.3.1.2. (Cont'd)  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
CSA	CAN/CSA-B356-10	Water Pressure Reducing Valves for Domestic Water Supply Systems	7.2.10.12.(1)
CSA	B365-10	Installation Code for Solid-Fuel-Burning Appliances and Equipment	6.2.1.4.(1) 6.2.1.4.(5) 9.21.1.3.(2) 9.22.10.2.(1) 9.33.1.2.(1)
CSA	B366.1-11	Solid-Fuel-Fired Central Heating Appliances	6.2.1.4.(2)
CSA	B415.1-00	Performance Testing of Solid-Fuel-Burning Heating Appliances	6.2.1.4.(7) 9.33.1.2.(2)
CSA	B481.1-12	Testing and Rating of Grease Interceptors Using Lard	7.2.3.2.(3) 8.1.3.1.(8)
CSA	B481.2-12	Testing and Rating of Grease Interceptors Using Oil	7.2.3.2.(3) 8.1.3.1.(8)
CSA	B481.4-12	Maintenance of Grease Interceptors	8.9.3.3.(1)
CSA	CAN/CSA-B483.1-07	Drinking Water Treatment Systems	7.2.10.17.(1)
CSA	CAN/CSA-B602-10	Mechanical Couplings for Drain, Waste, and Vent Pipe and Sewer Pipe	7.2.5.3.(2) 7.2.10.4.(2)
CSA	C22.2 No. 0.3-09	Test Methods for Electrical Wires and Cables	3.1.4.3.(1); 3.1.4.3.(2) 3.1.5.18.(1); 3.1.5.18.(2) 3.1.5.21.(1); 3.1.5.21.(2) 3.6.4.3.(1); 9.34.1.5.(1)
CSA	C22.2 No.113-10	Fans and Ventilators	9.32.3.9.(6)
CSA	C22.2 No. 141-10	Emergency Lighting Equipment	3.2.7.4.(2) 3.4.5.1.(3) 9.9.11.3.(3) 9.9.12.3.(7)
CSA	C22.2 No. 211.0-03	General Requirements and Methods of Testing for Nonmetallic Conduit	3.1.5.20.(1)
CSA	CAN/CSA-C22.2 No. 262-04	Optical Fiber Cable and Communication Cable Raceway Systems	3.1.5.20.(1)
CSA	CAN/CSA-C22.3 No. 1-10	Overhead Systems	3.1.19.1.(2)
CSA	CAN/CSA-C88-M90	Power Transformers and Reactors	3.6.2.7.(10)
CSA	CAN/CSA-C260-M90	Rating for the Performance of Residential Mechanical Ventilating Equipment	9.32.3.9.(1) 9.32.3.9.(2) Table 9.32.3.9.
CSA	C282-09	Emergency Electrical Power Supply for Buildings	3.2.7.5.(1)
CSA	CAN/CSA-C439-09	Rating the Performance of Heat/Energy-Recovery Ventilators	6.2.1.6.(2) 9.32.3.11.(2)
CSA	CAN/CSA-C448.1-02	Design and Installation of Earth Energy Systems for Commercial and Institutional Buildings	6.2.1.4.(4)
CSA	CAN/CSA-C448.2-02	Design and Installation of Earth Energy Systems for Residential and Other Small Buildings	6.2.1.4.(3)
CSA	F280-12	Determining the Required Capacity of Residential Space Heating and Cooling Appliances	6.2.1.1.(1) 9.33.2.2.(3)
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**Table 1.3.1.2. (Cont'd)**  
**Documents Referenced in the Building Code**  
**Forming Part of Sentence 1.3.1.2.(1)**

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
CSA	CAN/CSA-F326-M91	Residential Mechanical Ventilation Systems	6.2.1.1.(1)
CSA	CAN/CSA-F379.1-09	Packaged Solar Domestic Hot Water Systems (Liquid-to-Liquid Heat Transfer)	7.2.10.13.(1) 7.6.2.5.(3) 7.6.2.5.(4)
CSA	F383-08	Installation of Packaged Solar Domestic Hot Water Systems	7.6.1.13.(1)
CSA	CAN/CSA-G30.18-09	Carbon Steel Bars for Concrete Reinforcement	9.3.1.1.(4) 9.39.1.3.(1)
CSA	G40.21-04	General Requirements for Rolled or Welded Structural Quality Steel	4.2.3.8.(1) Table 5.10.1.1. 9.23.4.3.(2)
CSA	CAN/CSA-G164-M92	Hot Dip Galvanising of Irregularly Shaped Articles	4.4.4.1.(4)
CSA	CAN/CSA-G401-07	Corrugated Steel Pipe Products	Table 5.10.1.1. 7.2.6.8.(1) 9.14.3.1.(1)
CSA	CAN/CSA-O80 Series-08	Wood Preservation	3.1.4.5.(1) 4.2.3.2.(1) 4.2.3.2.(2) Table 5.10.1.1.
CSA	CAN/CSA-O80.1-08	Specification of Treated Wood	9.3.2.9.(6)
CSA	CAN/CSA-O80.2-08	Processing and Treatment	4.2.3.2.(1)
CSA	CAN/CSA-O80.3-08	Preservative Formulations	4.2.3.2.(1)
CSA	O80.15-97	Preservative Treatment of Wood for Building Foundation Systems, Basements and Crawl Spaces by Pressure Processes	4.2.3.2.(1)
CSA	O86-09	Engineering Design in Wood	Table 4.1.8.9. 4.3.1.1.(1)
CSA	O115-M1982	Hardwood and Decorative Plywood	Table 5.10.1.1. 9.27.8.1.(1) 9.30.2.2.(1)
CSA	O118.1-08	Western Red Cedar Shakes and Shingles	Table 5.10.1.1. 9.26.2.1.(1) 9.27.7.1.(1)
CSA	O118.2-08	Eastern White Cedar Shingles	Table 5.10.1.1. 9.26.2.1.(1) 9.27.7.1.(1)
CSA	O121-08	Douglas Fir Plywood	Table 5.10.1.1. 9.23.14.2.(1) 9.23.15.2.(1) Table 9.23.16.2.A. 9.27.8.1.(1) 9.30.2.2.(1) Table A-13 Table A-14 Table A-15
CSA	CAN/CSA-O122-06	Structural Glued-Laminated Timber	Table A-11 Table A-16
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Table 1.3.1.2. (Cont'd)  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
CSA	CAN/CSA-0132.2 Series-90	Wood Flush Doors	9.7.4.3.(4)
CSA	O141-05	Softwood Lumber	Table 5.10.1.1. 9.3.2.6.(1)
CSA	O151-09	Canadian Softwood Plywood	Table 5.10.1.1. 9.23.14.2.(1) 9.23.15.2.(1) Table 9.23.16.2.A. 9.27.8.1.(1) 9.30.2.2.(1) Table A-13 Table A-14 Table A-15
CSA	O153-M1980	Poplar Plywood	Table 5.10.1.1. 9.23.14.2.(1) 9.23.15.2.(1) Table 9.23.16.2.A. 9.27.8.1.(1) 9.30.2.2.(1)
CSA	O177-06	Qualification Code for Manufacturers of Structural Glued-Laminated Timber	4.3.1.2.(1) Table A-11 Table A-16
CSA	O325-07	Construction Sheathing	Table 5.10.1.1. 9.23.14.2.(1) 9.23.14.4.(2) Table 9.23.14.5.B. 9.23.15.2.(1) 9.23.15.3.(2) Table 9.23.15.7.B. Table 9.23.16.2.B. 9.29.9.1.(2) 9.29.9.2.(5) Table A-13 Table A-14 Table A-15
CSA	O437.0-93	OSB and Waferboard	Table 5.10.1.1. 9.23.14.2.(1) 9.23.14.4.(2) 9.23.15.2.(1) 9.23.15.3.(2) Table 9.23.16.2.A. 9.27.10.1.(1) 9.29.9.1.(2) 9.30.2.2.(1) Table A-13 Table A-14 Table A-15
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**Table 1.3.1.2. (Cont'd)**  
**Documents Referenced in the Building Code**  
**Forming Part of Sentence 1.3.1.2.(1)**

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
CSA	S16-09	Design of Steel Structures	Table 4.1.8.9. 4.3.4.1.(1)
CSA	CAN/CSA-S136-07	North American Specifications for the Design of Cold Formed Steel Structural Members (using the Appendix B provisions applicable to Canada)	Table 4.1.8.9. 4.3.4.2.(1)
CSA	CAN/CSA-S157-05 / S157.1-05	Strength Design in Aluminum / Commentary on CSA S157-05, Strength Design in Aluminum	4.3.5.1.(1)
CSA	S304.1-04	Design of Masonry Structures	Table 4.1.8.9. 4.3.2.1.(1)
CSA	S307-M1980	Load Test Procedure for Wood Roof Trusses for Houses and Small Buildings	9.23.13.11.(5)
CSA	S367-09	Air-, Cable-, and Frame-Membrane Supported Structures	4.4.1.1.(1)
CSA	CAN/CSA-S406-92	Construction of Preserved Wood Foundations	9.13.2.8.(1) 9.15.2.4.(1) 9.16.5.1.(1)
CSA	S413-07	Parking Structures	4.4.2.1.(1)
CSA	S478-95	Guideline on Durability in Buildings	5.1.4.2.(3) Table 5.10.1.1.
CSA	Z32-09	Electrical Safety and Essential Electrical Systems in Health Care Facilities	3.2.7.3.(4) 3.2.7.6.(1) 3.7.5.1.(1)
CSA	CAN/CSA-Z91-02	Health and Safety Code for Suspended Equipment Operations	4.4.4.1.(1)
CSA	Z240 MH Series-09	Manufactured Homes	3.1.1.1.(2) of Division C 3.2.4.1.(3) of Division C
CSA	Z240.2.1-09	Structural Requirements for Manufactured Homes	9.1.1.9.(1) 9.12.2.2.(6) 9.15.1.3.(1)
CSA	Z240.10.1-08	Site Preparation, Foundation and Anchorage of Manufactured Homes	9.15.1.3.(1) 9.23.6.3.(1)
CSA	CAN/CSA-Z241 Series-03	Park Model Trailers	9.38.1.1.(1) 9.38.2.1.(1) 3.1.1.1.(2) of Division C 3.2.4.1.(3) of Division C
CSA	CAN/CSA-Z317.2-10	Special Requirements for Heating, Ventilation and Air Conditioning (HVAC) Systems in Health Care Facilities	6.2.1.1.(1)
CSA	CAN/CSA-Z662-11 / Z662.1-11	Oil and Gas Pipeline Systems / Commentary on CAN/CSA-Z662-11, Oil and Gas Pipeline Systems	3.2.3.21.(1)
CSA	Z7396.1-09	Medical Gas Piping Systems - Part 1: Pipelines for Medical Gases and Vacuum	3.7.5.2.(1)
CSA / IAPMO	CSA B45.5-11 / IAPMO Z124-2011	Plastic Plumbing Fixtures	7.2.2.2.(6)
CWC	2009	Engineering Guide for Wood Frame Construction	9.4.1.1.(1)
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Table 1.3.1.2. (Cont'd)  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
DBR	Technical Paper No. 194, May 1965	Fire Endurance of Protected Steel Columns and Beams	Table 11.5.1.1.A. Table 11.5.1.1.B. Table 11.5.1.1.C. Table 11.5.1.1.D/E. Table 11.5.1.1.F.
DBR	Technical Paper No. 207, October 1965	Fire Endurance of Unit Masonry Walls	Table 11.5.1.1.A. Table 11.5.1.1.B. Table 11.5.1.1.C. Table 11.5.1.1.D/E. Table 11.5.1.1.F.
DBR	Technical Paper No. 222, June 1966	Fire Endurance of Light-Framed and Miscellaneous Assemblies	Table 11.5.1.1.A. Table 11.5.1.1.B. Table 11.5.1.1.C. Table 11.5.1.1.D/E. Table 11.5.1.1.F.
EPA	625/R-92/016 (1994)	Radon Prevention in the Design and Construction of Schools and Other Large Buildings	6.2.1.1.(1)
FINA	2009	Rules and Regulations - FINA Facilities Rules 2009-2013 - FR5 Diving Facilities	3.11.4.1.(17)
HI	2005	Hydronics Institute Manuals	6.2.1.1.(1)
HRAI	2005	Digest	6.2.1.1.(1) 6.2.3.5.(1) 6.2.4.3.(13)
HUD	Rehabilitation Guidelines 2000	Guideline on Fire Ratings of Archaic Materials and Assemblies	Table 11.5.1.1.A. Table 11.5.1.1.B. Table 11.5.1.1.C. Table 11.5.1.1.D/E. Table 11.5.1.1.F.
HVI	HVI 915-2009	Procedure for Loudness Rating of Residential Fan Products	9.32.3.9.(2) Table 9.32.3.9.
HVI	HVI 916-2009	Airflow Test Procedure	9.32.3.9.(1)
ISO	3864-1: 2011	Graphical Symbols – Safety Colours and Safety Signs – Part 1: Design Principles for Safety Signs and Safety Markings	3.4.5.1.(2) 9.9.11.3.(2)
ISO	7010: 2003	Graphical Symbols - Safety Colours and Safety Signs - Safety Signs Used in Workplaces and Public Areas	3.4.5.1.(2) 9.9.11.3.(2)
ISO	8201: 1987(E)	Acoustics - Audible Emergency Evacuation Signal	3.2.4.20.(2)
ISO	23599: 2012	Assistive Products for Blind and Vision-Impaired Persons – Tactile Walking Surface Indicators	3.8.3.18.(1)
MMAH	Supplementary Standard SA-1, September 2, 2014	Objectives and Functional Statements Attributed to the Acceptable Solutions	1.2.1.1.(1) of Division A 1.2.1.1.(2) of Division A
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**Table 1.3.1.2. (Cont'd)**  
**Documents Referenced in the Building Code**  
**Forming Part of Sentence 1.3.1.2.(1)**

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
MMAH	Supplementary Standard SB-1, September 2, 2014	Climatic and Seismic Data	1.1.2.1.(1) 1.1.2.1.(2) 3.2.6.2.(2) 3.3.1.7.(1) 5.2.1.1.(1) 5.2.1.1.(2) 6.2.1.1.(1) 6.2.1.7.(1) 7.4.10.4.(1) 9.4.1.1.(3) 9.4.2.2.(1) Table 9.25.5.2. Table 9.32.3.10.A. 9.33.3.2.(1)
MMAH	Supplementary Standard SB-2, September 2, 2014	Fire Performance Ratings	3.1.5.23.(1) 3.1.7.1.(2) 3.1.8.14.(2) 3.1.9.5.(1) 3.1.9.5.(2) 3.1.12.1.(3) 3.2.3.12.(1) 3.2.3.13.(4) 3.13.2.1.(8) 3.13.3.5.(1) 3.13.3.6.(2) 3.13.4.2.(7) 9.10.3.1.(1) 9.10.3.2.(1) 9.10.5.1.(4) 9.10.9.9.(1) 9.10.13.14.(1)
MMAH	Supplementary Standard SB-3, September 2, 2014	Fire and Sound Resistance of Building Assemblies	9.10.3.1.(1) 9.10.5.1.(4) 9.11.2.1.(1) 9.11.2.1.(2)
MMAH	Supplementary Standard SB-4, September 14, 2012	Measures for Fire Safety in High Buildings	3.2.6.2.(1) 3.2.6.2.(6) 3.2.6.5.(3) 3.2.6.9.(1) 3.2.6.10.(2) 3.2.6.14.(1) Table 11.5.1.1.C. Table 11.5.1.1.D/E. Table 11.5.1.1.F.
MMAH	Supplementary Standard SB-5, September 1, 2013	Approved Sewage Treatment Units	8.6.2.2.(5)
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Table 1.3.1.2. (Cont'd)  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
MMAH	Supplementary Standard SB-6, September 14, 2012	Percolation Times and Soil Descriptions	8.2.1.2.(2)
MMAH	Supplementary Standard SB-7, September 14, 2012	Guards for Housing and Small Buildings	9.8.8.2.(5)
MMAH	Supplementary Standard SB-8, September 14, 2012	Design, Construction and Installation of Anchorage Systems for Fixed Access Ladders	3.6.1.5.(1)
MMAH	Supplementary Standard SB-9, September 14, 2012	Requirements for Soil Gas Control	9.13.4.1.(1) 9.13.4.2.(2) to (4)
MMAH	Supplementary Standard SB-10, September 14, 2012	Energy Efficiency Requirements	Table 9.7.3.3. 12.2.1.1.(2) 12.2.1.2.(2) 12.2.2.1.(1) 12.2.3.1.(1)
MMAH	Supplementary Standard SB-11, September 14, 2012	Construction of Farm Buildings	1.3.1.2.(4) of Division A
MMAH	Supplementary Standard SB-12, September 2, 2014	Energy Efficiency for Housing	Table 9.7.3.3. Table 11.5.1.1.C. 12.2.1.1.(3) 12.2.1.2.(3)
MMAH	Supplementary Standard SB-13, September 14, 2012	Glass in Guards	3.1.20.1.(1)
MMAH	Supplementary Standard SC-1, September 14, 2012	Code of Conduct for Registered Code Agencies	3.7.4.1.(2) of Division C
MOE	PIBS 6879 2008	Design Guidelines for Sewage Works	7.1.5.5.(2)
MOE	PIBS 6881e 2008	Design Guidelines for Drinking-Water Systems	7.1.5.5.(1)
NFPA	2014 Publication	National Fire Codes	6.2.1.1.(1)
NFPA	13-2013	Installation of Sprinkler Systems	3.1.9.1.(4); 3.2.4.9.(2) 3.2.4.17.(1); 3.2.5.13.(1) 3.2.8.4.(7); 3.3.2.12.(3) 3.15.1.1.(3); 3.15.1.1.(4) 3.15.1.5.(2); 3.15.1.6.(2) 3.15.2.1.(1); 3.15.2.2.(1) 3.15.3.1.(1); 9.10.9.6.(11)
NFPA	13D-2010	Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes	3.2.5.13.(3)
NFPA	13R-2010	Installation of Sprinkler Systems in Residential Occupancies up to and including Four Stories in Height	3.2.5.13.(2)
NFPA	14-2010	Installation of Standpipe and Hose Systems	3.2.9.2.(1)
NFPA	20-2010	Installation of Stationary Pumps for Fire Protection	3.2.4.10.(4) 3.2.5.19.(1)
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**Table 1.3.1.2. (Cont'd)**  
**Documents Referenced in the Building Code**  
**Forming Part of Sentence 1.3.1.2.(1)**

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
NFPA	24-2013	Installation of Fire Service Mains and Their Appurtenances	7.2.11.1.(1)
NFPA	68-2007	Explosion Protection by Deflagration Venting	3.3.6.3.(1) 3.3.6.4.(2) 3.3.6.4.(4)
NFPA	72-2013	National Fire Alarm and Signaling Code	3.2.4.22.(13) 9.10.19.1.(2) 9.10.19.3.(3)
NFPA	80-2010	Fire Doors and Other Opening Protectives	3.1.8.5.(2) 3.1.8.10.(2) 3.1.8.14.(1) 3.1.9.1.(5) 3.13.3.1.(2) 9.10.9.6.(13) 9.10.13.1.(1)
NFPA	82-2009	Incinerators, Waste and Linen Handling Systems and Equipment	6.2.6.1.(1) 9.10.10.5.(2)
NFPA	91-2010	Exhaust Systems for Air Conveying of Vapors, Gases, Mists and Noncombustible Particulate Solids	6.2.13.4.(1)
NFPA	96-2011	Ventilation Control and Fire Protection of Commercial Cooking Operations	3.2.4.9.(2) 6.2.2.6.(1)
NFPA	130-2010	Fixed Guideway Transit and Passenger Rail Systems	3.13.7.1.(1)
NFPA	211-2010	Chimneys, Fireplaces, Vents and Solid Fuel-Burning Appliances	6.3.1.2.(2) 6.3.1.3.(1)
NFPA	214-2011	Water-Cooling Towers	6.2.3.14.(3)
NFPA	701-2010	Fire Tests for Flame Propagation of Textiles and Films	3.14.1.6.(1) 3.14.2.5.(1)
NLGA	2010	Standard Grading Rules for Canadian Lumber	1.4.1.2.(1) of Division A 9.3.2.1.(1) Table 9.3.2.1. Tables A-1 to A-10
NRCan	January 2005, including all amendments, revisions and supplements effective to May 31, 2006	EnerGuide for New Houses: Administrative and Technical Procedures	12.2.1.1.(3) 12.2.1.2.(3)
NSF	NSF/ANSI 46-2010	Evaluation of Components and Devices Used in Wastewater Treatment Systems	8.6.2.1.(2)
NSF	NSF/ANSI 61-2013	Drinking Water System Components - Health Effects	7.2.10.7.(1)
SMACNA	ANSI/SMACNA 006-2006, 3rd Edition 2005	HVAC Duct Construction Standards - Metal and Flexible	6.2.1.1.(1) 6.2.4.2.(3) 6.2.4.3.(11) 6.2.4.3.(12)
TPIC	2011	Truss Design Procedures and Specifications for Light Metal Plate Connected Wood Trusses (Limit States Design)	9.23.13.11.(6)
Column 1	2	3	4

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Table 1.3.1.2. (Cont'd)  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
UL	ANSI/UL 300-2005	Fire Extinguishing Systems for Protection of Commercial Cooking Equipment	6.2.2.6.(2)
UL	UL 2034-2008	Single and Multiple Station Carbon Monoxide Alarms	6.2.12.3.(1) 9.33.4.3.(1)
ULC	CAN/ULC-S101-07	Fire Endurance Tests of Building Construction and Materials	3.1.5.12.(3) 3.1.5.12.(4) 3.1.5.12.(6) 3.1.7.1.(1) 3.1.11.7.(1) 3.2.3.8.(1) 3.2.6.5.(6) 9.10.16.3.(1)
ULC	CAN/ULC-S102-10	Test for Surface Burning Characteristics of Building Materials and Assemblies	3.1.5.25.(1) 3.1.12.1.(1)
ULC	CAN/ULC-S102.2-10	Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies	3.1.12.1.(2) 3.1.13.4.(1)
ULC	CAN/ULC-S102.3-07	Fire Test of Light Diffusers and Lenses	3.1.13.4.(1)
ULC	CAN/ULC-S102.4-10	Fire and Smoke Characteristics of Electrical Wiring and Cables	3.1.5.18.(1) 3.1.5.20.(2) 3.6.4.3.(1)
ULC	CAN/ULC-S104-10	Fire Tests of Door Assemblies	3.1.8.4.(1) 3.2.6.5.(3)
ULC	CAN/ULC-S105-09	Fire Door Frames Meeting the Performance Required by CAN/ULC-S104	9.10.13.6.(1)
ULC	CAN4-S106-M80	Fire Tests of Window and Glass Block Assemblies	3.1.8.4.(1)
ULC	CAN/ULC-S107-10	Fire Tests of Roof Coverings	3.1.15.1.(1)
ULC	CAN/ULC-S109-03	Flame Tests of Flame-Resistant Fabrics and Films	3.1.16.1.(1) 3.14.1.6.(1) 3.14.2.5.(1) 6.2.3.16.(1) 6.2.3.17.(1) 6.2.4.9.(1)
ULC	CAN/ULC-S110-07	Test for Air Ducts	6.2.3.2.(2) 6.2.3.2.(4)
ULC	ULC-S111-07	Fire Tests for Air Filter Units	6.2.3.13.(1) 6.2.4.14.(1)
ULC	CAN/ULC-S112-10	Fire Test of Fire-Damper Assemblies	3.1.8.4.(1)
ULC	CAN/ULC-S112.1-10	Leakage Rated Dampers for Use in Smoke Control Systems	6.2.3.9.(3)
ULC	CAN/ULC-S112.2-10	Fire Test of Ceiling Firestop Flap Assemblies	3.1.9.5.(2) 3.6.4.3.(2)
ULC	CAN/ULC-S113-07	Wood Core Doors Meeting the Performance Required by CAN/ULC-S104 for Twenty Minute Fire Rated Closure Assemblies	9.10.13.2.(1)
ULC	CAN/ULC-S114-05	Test for Determination of Non-Combustibility in Building Materials	1.4.1.2.(1) of Division A
Column 1	2	3	4



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**Table 1.3.1.2. (Cont'd)**  
**Documents Referenced in the Building Code**  
**Forming Part of Sentence 1.3.1.2.(1)**

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
ULC	CAN/ULC-S115-11	Fire Tests of Firestop Systems	3.1.5.16.(3) 3.1.9.1.(1) 3.1.9.1.(2) 3.1.9.1.(3) 3.1.9.3.(7) 3.1.9.4.(3) 3.1.9.4.(7) 9.10.9.6.(2) 9.10.9.7.(3)
ULC	CAN/ULC-S124-06	Test for the Evaluation of Protective Coverings for Foamed Plastic	3.1.5.12.(2)
ULC	CAN/ULC-S126-06	Test for Fire Spread Under Roof-Deck Assemblies	3.1.14.1.(1) 3.1.14.2.(1)
ULC	CAN/ULC-S134-92	Fire Test of Exterior Wall Assemblies	3.1.5.5.(1) 3.2.3.7.(3) 3.2.3.7.(6)
ULC	CAN/ULC-S135-04	Test Method for the Determination of Combustibility Parameters of Building Materials Using an Oxygen Consumption Calorimeter (Cone Calorimeter)	3.1.5.1.(2)
ULC	CAN/ULC-S138-06	Fire Test for Fire Growth of Insulated Building Panels in a Full-Scale Room Configuration	3.1.5.12.(7)
ULC	ULC-S139-00	Fire Test for Evaluation of Integrity of Electrical Cables	3.2.7.10.(2) 3.2.7.10.(3)
ULC	CAN/ULC-S143-09	Fire Tests for Non-Metallic Electrical and Optical Fibre Cable Raceways	3.1.5.20.(1)
ULC	S505-1974	Fusible Links for Fire Protection Service	3.1.8.9.(1)
ULC	S513-1978	Threaded Couplings for 38 mm and 65 mm Fire Hose	3.2.9.2.(7)
ULC	CAN/ULC-S524-06	Installation of Fire Alarm Systems	3.1.8.12.(2) 3.1.8.12.(3) 3.2.4.5.(1) 3.2.4.22.(6) 3.2.4.22.(11) 9.10.19.4.(3) 9.10.19.6.(2)
ULC	CAN/ULC-S531-02	Smoke Alarms	3.2.4.22.(1) 9.10.19.1.(1)
ULC	CAN/ULC-S537-04	Verification of Fire Alarm Systems	3.2.4.5.(2) 3.2.4.22.(6)
ULC	CAN/ULC-S543-09	Internal Lug Quick Connect Couplings for Fire Hose	3.2.9.2.(7)
ULC	CAN/ULC-S553-02	Installation of Smoke Alarms	3.2.4.22.(9) 9.10.19.3.(2)
ULC	CAN/ULC-S561-03	Installation and Services for Fire Signal Receiving Centres and Systems	3.2.4.8.(4)
ULC	CAN/ULC-S572-10	Photoluminescent and Self-Luminous Signs and Path Marking Systems	3.4.5.1.(5) 9.9.11.3.(3)
ULC	CAN/ULC-S610-M87	Factory-Built Fireplaces	9.22.8.1.(1)
ULC	S628-93	Fireplace Inserts	9.22.10.1.(1)
ULC	CAN/ULC-S629-M87	650°C Factory-Built Chimneys	9.21.1.2.(1)
Column 1	2	3	4

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Table 1.3.1.2. (Cont'd)  
Documents Referenced in the Building Code  
Forming Part of Sentence 1.3.1.2.(1)

Issuing Agency	Document Number	Title of Document <sup>(1)</sup>	Code Reference
ULC	CAN/ULC-S639-M87	Steel Liner Assemblies for Solid Fuel-Burning Masonry Fireplaces	9.22.2.3.(1)
ULC	CAN/ULC-S701-11	Thermal Insulation, Polystyrene, Boards and Pipe Covering	Table 5.10.1.1. 9.15.4.1.(1) Table 9.23.16.2.A. 9.25.2.2.(1) 9.25.2.2.(4)
ULC	CAN/ULC-S702-09	Mineral Fibre Thermal Insulation for Buildings	Table 5.10.1.1. Table 9.23.16.2.A. 9.25.2.2.(1)
ULC	CAN/ULC-S703-09	Cellulose Fibre Insulation (CFI) for Buildings	Table 5.10.1.1. 9.25.2.2.(1)
ULC	CAN/ULC-S704-11	Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced	Table 5.10.1.1. Table 9.23.16.2.A. 9.25.2.2.(1)
ULC	CAN/ULC-S705.1-01	Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density - Material - Specification	Table 5.10.1.1. 9.25.2.2.(1)
ULC	CAN/ULC-S705.2-05	Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density - Application	5.3.1.3.(3) Table 5.10.1.1. 9.25.2.5.(1)
ULC	CAN/ULC-S706-09	Wood Fibre Thermal Insulation for Buildings	Table 5.10.1.1. 9.23.15.7.(3) Table 9.23.16.2.A. 9.25.2.2.(1) 9.29.8.1.(1)
ULC	CAN/ULC-S716.1-12	Exterior Insulation and Finish Systems (EIFS) – Materials and Systems	5.10.3.1.(1) 9.27.13.1.(1) 9.27.13.2.(1)
ULC	CAN/ULC-S716.2-12	Exterior Insulation and Finish Systems (EIFS) – Installation of EIFS Components and Water Resistive Barrier	9.27.13.3.(2)
ULC	CAN/ULC-S716.3-12	Exterior Insulation and Finish Systems (EIFS) – Design Application	9.27.13.3.(1)
ULC	CAN/ULC-S741-08	Air Barrier Materials - Specification	5.4.1.2.(1)
ULC	ULC/ORD-C263.1-99	Sprinkler-Protected Window Systems	3.1.8.18.(1)
ULC	ULC/ORD-C199P-02	Combustible Piping for Sprinkler Systems	3.2.5.14.(2) 3.2.5.14.(5)
ULC	ULC/ORD-C1254.6-1995	Fire Testing of Restaurant Cooking Area Fire Extinguishing System Units	6.2.2.6.(2) 3.6.4.3.(1)
USDA	October 1993	Soil Survey Manual	8.2.1.2.(2)
Column 1	2	3	4

Notes to Table 1.3.1.2.:

(1) Some titles have been abridged to omit superfluous wording.

## 1.3.2. Abbreviations

### 1.3.2.1. Abbreviations of Proper Names (See Appendix A.)

(1) In this Code, an abbreviation of proper names listed in Column 1 of Table 1.3.2.1. has the meaning assigned opposite it in Column 2.

Table 1.3.2.1.  
Abbreviations of Proper Names  
Forming Part of Sentence 1.3.2.1.(1)

Abbreviation	Meaning
ACGIH	American Conference of Governmental Industrial Hygienists
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
APHA	American Public Health Association
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	The American Society of Mechanical Engineers
ASPE	American Society of Plumbing Engineers
ASSE	American Society of Sanitary Engineering
ASTM	American Society for Testing and Materials
AWPA	American Wood-Preservers' Association
AWS	American Welding Society
AWWA	American Water Works Association
BCMOH	British Columbia Ministry of Health
BNQ	Bureau de Normalisation du Québec
CAN	National Standard of Canada designation The number or name following the CAN designation represents the agency under whose auspices the standard is issued. CAN1 designates CGA, CAN2 designates CGSB, CAN3 designates CSA, and CAN4 designates ULC.
CCBFC	Canadian Commission on Building and Fire Codes
CGSB	Canadian General Standards Board
CSA	Canadian Standards Association
CWC	Canadian Wood Council
DBR	Division of Building Research, known as the Institute for Research in Construction since 1985
EPA	Environmental Protection Agency
FINA	Fédération Internationale de Natation
HI	Hydronics Institute
HRAI	Heating, Refrigerating and Air-Conditioning Institute of Canada
HUD	U.S. Department of Housing and Urban Development
HVI	Home Ventilating Institute
Column 1	2

Table 1.3.2.1. (Cont'd)  
Abbreviations of Proper Names  
Forming Part of Sentence 1.3.2.1.(1)

Abbreviation	Meaning
IAPMO	International Association of Plumbing and Mechanical Officials
IESNA	Illuminating Engineering Society of North America
ISO	International Organization for Standardization
MMAH	Ontario Ministry of Municipal Affairs and Housing
MOE	Ontario Ministry of the Environment
NFPA	National Fire Protection Association
NLGA	National Lumber Grades Authority
NRCan	Natural Resources Canada
NSF	NSF International, formerly called National Sanitation Federation
SMACNA	Sheet Metal and Air Conditioning Contractors National Association Inc.
TC	Transport Canada
TPIC	Truss Plate Institute of Canada
UL	Underwriters Laboratories Inc.
ULC	Underwriters' Laboratories of Canada
USDA	United States Department of Agriculture
WEF	World Environment Federation
Column 1	2

## Part 3

# Fire Protection, Occupant Safety and Accessibility

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### 3.1.2.6. Restaurants

(1) A restaurant is permitted to be classified as a Group E *major occupancy* provided the restaurant is designed to accommodate not more than 30 persons consuming food or drink.

### 3.1.2.7. Storage of Combustible Fibres

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

## 3.1.3. Multiple Occupancy Requirements

### 3.1.3.1. Separation of Major Occupancies

r<sub>5</sub> (1) Except as provided by Sentences (2) to (5), *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 two *dwelling units* are contained together with a Group E *major occupancy*, the *fire-resistance rating* of the *fire separation* between the two *major occupancies* need not be more than 1 h.

r<sub>5</sub>

Table 3.1.3.1.  
Major Occupancy Fire Separations<sup>(1)</sup>  
Forming Part of Sentence 3.1.3.1.(1)

Major Occupancy	Minimum Fire-Resistance Rating of Fire Separation, h <sup>(1)</sup>												
	Adjoining Major Occupancy												
	A-1	A-2	A-3	A-4	B-1	B-2	B-3	C	D	E	F-1	F-2	F-3
A-1	N/A	1	1	1	2	2	2	1	1	2	N/A	2	1
A-2	1	N/A	1	1	2	2	2	1 <sup>(2)</sup>	1 <sup>(3)</sup>	2	N/A	2	1
A-3	1	1	N/A	1	2	2	2	1	1	2	N/A	2	1
A-4	1	1	1	N/A	2	2	2	1	1	2	N/A	2	1
B-1	2	2	2	2	N/A	2	2	2	2	2	N/A	2	2
B-2	2	2	2	2	2	N/A	1	2	2	2	N/A	2	2
B-3	2	2	2	2	2	1	N/A	2	2	2	N/A	2	2
C	1	1 <sup>(2)</sup>	1	1	2	2	2	N/A	1	2 <sup>(4)</sup>	N/A	2	1
D	1	1 <sup>(3)</sup>	1	1	2	2	2	1	N/A	N/A	3	N/A	N/A
E	2	2	2	2	2	2	2	2 <sup>(4)</sup>	N/A	N/A	3	N/A	N/A
F-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3	3	N/A	2	2
F-2	2	2	2	2	2	2	2	2	N/A	N/A	2	N/A	N/A
F-3	1	1	1	1	2	2	2	1	N/A	N/A	2	N/A	N/A
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14

#### 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 3.1.3.1.(3).
- (3) See Sentence 3.1.3.1.(4).
- (4) See Sentence 3.1.3.1.(2).

- ¶5 (3) In a *building* within the scope of Article 3.2.2.43A., a *fire separation* with a 2 h *fire-resistance rating* is required between the Group C and Group A, Division 2 *major occupancies*.
- ¶5 (4) In a *building* within the scope of Article 3.2.2.50A., a *fire separation* with a 2 h *fire-resistance rating* is required between the Group D and Group A, Division 2 *major occupancies*.
- ¶5 (5) The *fire separations* required between *major occupancies* in Sentence (1) are permitted to be penetrated by floor openings protected in conformance with Subsection 3.2.8., except for *fire separations* for Group F, Division 1 *major occupancies* and for *mezzanines* described in Sentence 3.2.8.2.(1).

### 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) Except as provided in Sentence (4) and Sentence 3.10.2.4.(9), not more than one *suite of residential occupancy* shall be contained within a *building* classified as a Group F, Division 2 *major occupancy*.
- (3) A sleeping room or sleeping area shall not open directly into a room or area where food is intended to be stored, prepared, processed, distributed, served, sold or offered for sale. (See Appendix A.)
- (4) A Group F, Division 2 *major occupancy* is permitted in a *building* containing only *live/work units* if the *occupancy* is for the exclusive use of the occupants of the *live/work units*.
- ¶5 (5) A *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A. shall not contain,
- a Group A, Division 1 or 3, Group B, or Group F, Division 1 or 2 *major occupancy*,
  - a Group A, Division 2 or a Group E *major occupancy* above the second *storey*, or
  - except as permitted by Sentence (6), a Group F, Division 3 *major occupancy*.
- (See Appendix A.)
- ¶5 (6) A *storage garage* below the third *storey* is permitted in a *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A. (See Appendix A.)

## 3.1.4. Combustible Construction

### 3.1.4.1. Combustible Materials Permitted

- ¶5 (1) Except as required by this Part, a *building* permitted to be of *combustible construction* is permitted to be constructed of *combustible materials*, with or without *noncombustible* components.

### 3.1.4.2. Protection of Foamed Plastics

(1) 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 assemblies,

- by one of the interior finishes described in Subsections 9.29.4. to 9.29.9.,
  - by any thermal barrier that meets the requirements of Sentence 3.1.5.12.(2), or
  - where the *building* does not contain a Group B or Group C *major occupancy*, by sheet metal,
    - mechanically fastened to the supporting assembly independent of the insulation,
    - not less than 0.38 mm thick, and
    - with a melting point not below 650°C.
- (See Appendix A.)

(2) The *flame-spread rating* on any exposed surface of *combustible* insulation, or any surface that would be exposed by cutting through it in any direction, shall be not more than 500.



### 3.1.4.3. Wires and Cables (See Appendix A.)

- (1) Except as permitted by Sentences (2) and (3), optical fibre cables and electrical wires and cables with *combustible* insulation, jackets or sheathes 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 in Clause 4.11.1. of CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables (FT1 Rating)”, or
  - (b) be located in,
    - (i) totally enclosed *noncombustible* raceways, (See Appendix A.)
    - (ii) concealed spaces in walls,
    - (iii) concrete slabs, or
    - (iv) totally enclosed nonmetallic raceways conforming to Clause 3.1.5.20(1)(b).
- (2) The requirement in Clause (1)(a) is considered to be met where the wires and cables,
  - (a) exhibit a vertical char of not more than 1.5 m when tested in conformance with the Vertical Flame Test – Cables in Cabletrough in Clause 4.11.4. of CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables” (FT4 Rating), or
  - (b) exhibit a flame-spread of not more than 1.5 m, a smoke density of not more than 0.5 at peak optical density and a smoke density not more than 0.15 at average optical density when tested in conformance with the Flame and Smoke Test in the Appendix to CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables” (FT6 Rating).
- (3) Service-entrance cables for communication and community antennae distribution systems need not conform to Sentence (1) provided,
  - (a) the service-entrance cables are located in a *building* permitted to be of *combustible construction* and are not more than 3 m in length from the point of entry into the *building* or from the point of leaving protection as required in Clause (1)(b), or
  - (b) the service-entrance cables enter into an electrical or telephone *service room* separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* not less than 1 h.

### 3.1.4.4. Nonmetallic Raceways

- (1) Totally enclosed nonmetallic raceways used in a *plenum* in a *building* permitted to be of *combustible construction* shall meet the requirements of Clause 3.1.5.20.(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-M, “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 3.1.4.7.  
Heavy Timber Dimensions  
Forming Part of Sentence 3.1.4.7.(2)

Supported Assembly	Structural Element	Solid Sawn (width × depth), mm × mm	Glued-Laminated (width × depth), mm × mm	Round (diam), mm
Roofs only	Columns	140 × 191	130 × 190	180
	Arches supported on the tops of walls or abutments	89 × 140	80 × 152	---
	Beams, girders and trusses	89 × 140	80 × 152	---
	Arches supported at or near the floor line	140 × 140	130 × 152	---
Floors, floors plus roofs	Columns	191 × 191	175 × 190	200
	Beams, girders, trusses and arches	140 × 241 or 191 × 191	130 × 228 or 175 × 190	---
Column 1	2	3	4	5

- (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,
- 64 mm thick, splined or tongued and grooved, or
  - 38 mm wide and 89 mm deep set on edge and well-spiked together.
- (5) Floors in *heavy timber construction* shall be laid,
- so that no continuous line of end joints will occur except at points of support, and covered with,
    - tongued and grooved flooring not less than 19 mm thick laid cross-wise or diagonally, or
    - tongued and grooved phenolic-bonded plywood, strandboard or waferboard not less than 12.5 mm thick, and
  - 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 not less than 28 mm thick, or glued-laminated or solid sawn plank that is,
- not less than 38 mm thick, splined or tongued and grooved, or
  - 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,
- reinforced concrete or metal caps with brackets,
  - steel or iron caps with pintles and base plates, or
  - 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 tops 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 space below the roof deck or sheathing is *sprinklered*.

### **3.1.4.8. Cladding**

- (1) Except as permitted by Sentence 3.2.3.7.(6), cladding for a *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A. that exceeds 4 *storeys* in *building height* or cladding for a *fire compartment* in such a *building* shall be *noncombustible*.

### **3.1.4.9. Combustible Piping**

- (1) Except as provided by Sentence (2), *combustible* piping and tubing and associated adhesives used in a *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A. shall have a *flame-spread rating* not more than 25.
- (2) Sentence (1) does not apply to,
- (a) *combustible* sprinkler piping and associated adhesives,
  - (b) *combustible* tubing for pneumatic controls and associated adhesives, provided the tubing has an outside diameter not more than 10 mm,
  - (c) *combustible* piping and tubing and associated adhesives used in *public pools* and *public spas*, and
  - (d) *combustible* piping and tubing and associated adhesives concealed in a concrete floor slab.

## **3.1.5. Noncombustible Construction**

### **3.1.5.1. Noncombustible Materials**

- (1) Except as permitted by Sentences (2) to (4) and Articles 3.1.5.2. to 3.1.5.25., 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.
- (2) Notwithstanding the definition for *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 CAN/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/m<sup>2</sup>,
- (a) its average total heat release is not more than 3 MJ/m<sup>2</sup>,
  - (b) its average total smoke extinction area is not more than 1.0 m<sup>2</sup>, 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 the 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,
  - (b) mastics and caulking materials applied to provide flexible seals between the major components of exterior wall construction,
  - (c) *fire stops* conforming to Sentence 3.1.9.1.(1) and *fire blocks* conforming to Article 3.1.11.7.,
  - (d) tubing for pneumatic controls provided it has an outside diameter 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 1 000 mm,
  - (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 m<sup>2</sup>,
    - (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 2 500 mm from adjacent assemblies and 1 200 mm from required *fire separations*, or
  - (b) 75, provided the assemblies,
    - (i) have an individual area not more than 27 m<sup>2</sup>,
    - (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 1 200 mm from adjacent assemblies and from required *fire separations*.
- (See Appendix A.)

- (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 in Sentence (2) 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) sprinklers are installed in,
    - (i) any *storey* with *combustible* glazing, and
    - (ii) the *storey* immediately above the *storey* with *combustible* glazing.
- (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 1 000 mm 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 Components for Exterior Walls

- (1) Except as required by Sentence (2), an exterior *non-loadbearing* wall assembly that includes *combustible* components is permitted to be used 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) not more than 6 *storeys* in *building height* if *sprinklered*,
  - (b) the interior surfaces of the wall assembly are protected by a thermal barrier conforming to Sentence 3.1.5.12.(3), and
  - (c) the wall assembly satisfies the criteria of Sentences (3) and (4) when subjected to testing in conformance with CAN/ULC-S134, “Fire Test of Exterior Wall Assemblies”.
- (See Appendix A.)

(2) Except as permitted by Articles 3.2.3.10. and 3.2.3.11., where the area of *unprotected openings* determined in accordance with Tables 3.2.3.1.B. to 3.2.3.1.E. is required to be not more than 10% of the *exposing building face*, the construction requirements of Table 3.2.3.7. shall be met.

(3) Flaming on or in the wall assembly shall not spread more than 5 m above the opening during the test procedure referenced in Sentence (1). (See Appendix A.)

(4) The heat flux during the flame exposure on a wall assembly shall be not more than 35 kW/m<sup>2</sup> measured 3.5 m above the opening during the test procedure referenced in Sentence (1). (See Appendix A.)

r<sub>5</sub> (5) 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 conditioned in conformance with ASTM D2898, “Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing”.

(6) The requirements in this Article do not apply where foamed plastic insulation is used in an exterior wall assembly of a *building* and the insulation is protected in conformance with Sentences 3.2.3.8.(1) and (2).

### 3.1.5.6. 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.

### 3.1.5.7. 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*.

### 3.1.5.8. 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 375 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 *combustible* subfloor and *combustible* finished flooring.

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

### 3.1.5.9. Combustible Stairs in Dwelling Units

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

### 3.1.5.10. Combustible Interior Finish

(1) *Combustible* interior finish, including paint, wallpaper, and other interior finishes not more than 1 mm thick, is permitted in a *building* required to be of *noncombustible construction*.

(2) *Combustible* interior wall finishes, other than foamed plastics, are permitted in a *building* required to be of *noncombustible construction* provided they,

- (a) are not more than 25 mm thick, and
- (b) 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) *Combustible* interior ceiling finishes, other than foamed plastics, are permitted in a *building* required to be of *noncombustible construction* provided they,

- (a) are not more than 25 mm thick, except for exposed *fire-retardant treated wood* battens, and
- (b) 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, or are of *fire-retardant treated wood*, 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.

### 3.1.5.11. 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* of the surface is not more than 25.

### 3.1.5.12. Combustible Insulation and its Protection

- (1) *Combustible* insulation, other than foamed plastics, is permitted in a *building* required to be of *noncombustible construction* provided that it has 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, where the insulation is not protected as described in Sentences (3) and (4).
- (2) Foamed plastic insulation having 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* 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,
- not less than 12.7 mm thick gypsum board mechanically fastened to a supporting assembly independent of the insulation,
  - lath and plaster, mechanically fastened to a supporting assembly independent of the insulation,
  - masonry,
  - concrete, or
  - 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”. (See Appendix A.)
- (3) *Combustible* insulation having a *flame-spread rating* more than 25 but not more than 500 on an 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*, provided the insulation is protected from adjacent space in the *building*, other than adjacent concealed spaces within wall assemblies, by a thermal barrier as described in Sentence (2), except that in a *building* that is not *sprinklered* and is more than 18 m high, measured between *grade* and the floor level of the top *storey*, or in a *building* that is not *sprinklered* and is regulated by the provisions of Subsection 3.2.6., the insulation shall be protected by a thermal barrier consisting of,
- 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,
  - lath and plaster, mechanically fastened to a supporting assembly independent of the insulation,
  - masonry or concrete not less than 25 mm thick, or
  - 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.
- (4) *Combustible* insulation having 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*, provided the insulation is protected from adjacent space in the *building*, other than adjacent concealed spaces within wall assemblies, by a thermal barrier as described in Sentence (2), except that in a *building* that is not *sprinklered* and is more than 18 m high, measured between *grade* and the floor level of the top *storey*, or in a *building* that is not *sprinklered* and is regulated by the provisions of Subsection 3.2.6., the insulation shall be protected by a thermal barrier consisting of,
- 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,
    - ASTM C1396 / C1396M, “Gypsum Board”, or
    - CAN/CSA-A82.27-M, “Gypsum Board”,
  - non-loadbearing masonry or concrete not less than 50 mm thick,
  - loadbearing masonry or concrete not less than 75 mm thick, or
  - 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 20 min, and
    - will remain in place for not less than 40 min.
- (5) *Combustible* insulation, including foamed plastics, installed above roof decks, outside of *foundation walls* below ground level and beneath concrete slabs-on-ground is permitted to be used in a *building* required to be of *noncombustible construction*.

- (6) Thermosetting foamed plastic insulation having a *flame-spread rating* not more than 500 that forms part of a factory-assembled exterior wall panel that does not incorporate an air space is permitted to be used in a *building* required to be of *noncombustible construction* provided,
- (a) the foamed plastic is protected on both sides by sheet steel not less than 0.38 mm thick that will remain in place for not less than 10 min when the wall panel is tested in conformance with CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials”,
  - (b) the *flame-spread rating* of the wall panel, determined by subjecting a sample including an assembled joint to the appropriate test described in Subsection 3.1.12., is not more than the *flame-spread rating* permitted for the room or space that it bounds,
  - (c) the *building* does not contain a Group B or Group C *major occupancy*, and
  - (d) the *building* is not more than 18 m high, measured between *grade* and the floor level of the top *storey*.
- (7) A factory-assembled non-loadbearing interior or exterior wall or ceiling panel containing foamed plastic insulation having a *flame-spread rating* of not more than 500 is permitted to be used in a *building* required to be of *noncombustible construction* provided,
- (a) the *building* is *sprinklered*,
  - (b) the *building* is not more than 18 m high, measured between *grade* and the floor level of the uppermost *storey*,
  - (c) the *building* does not contain a Group A, Group B or Group C *major occupancy*,
  - (d) the panel does not contain an air space,
  - (e) the panel, when tested in conformance with CAN/ULC-S138, “Test for Fire Growth of Insulated Building Panels in a Full-Scale Room Configuration”, meets the criteria defined in the document, and
  - (f) the *flame-spread rating* of a panel, determined by subjecting a sample, including an assembled joint typical of field installation, to the appropriate test described in Subsection 3.1.12., is not more than the *flame-spread rating* permitted for the room or space that it bounds.

### 3.1.5.13. 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 m<sup>2</sup> in area are permitted to be used in a *building* required to be of *noncombustible construction* in a *floor area* that is not *sprinklered* provided the *partitions*,
- (a) are not required *fire separations*, and
  - (b) are not located in a *care, care and treatment* or *detention occupancy*.
- R1**
- (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, care and treatment* or *detention occupancy*, and
  - (c) the *partitions* are not installed as enclosures for *exits* or *vertical service spaces*.
- R1**
- (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 *floor area* containing the *partitions* is *sprinklered*, and
  - (b) the *partitions* are not,
    - (i) located in a *care, care and 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).
- R1**

### 3.1.5.14. 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*.



### 3.1.5.15. 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 Part 6.
- (3) In a *building* required to be of *noncombustible construction*, *combustible* ducts need not comply with the requirements of Part 6 provided the ducts are,
  - (a) part of a duct system conveying only ventilation air, and
  - (b) contained entirely within a *dwelling unit*.

### 3.1.5.16. Combustible Piping Materials

- (1) Except as permitted by Sentences (2) and (3) and by Clause 3.1.5.2.(1)(d) and Article 3.1.5.22., *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*.
- (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*,
  - (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.

### 3.1.5.17. Combustible Plumbing Fixtures

- (1) *Combustible plumbing fixtures* are permitted in a *building* required to be of *noncombustible construction* if they are constructed of material having a *flame-spread rating* and smoke developed classification permitted in Subsection 3.1.13.

### 3.1.5.18. Wires and Cables

- (1) Except as permitted by Sentence (2) and Articles 3.1.5.19. and 3.1.5.21., 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 Cabletrough in Clause 4.11.4. of CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables”, (FT4 Rating),
  - (b) the wires and cables are located in,
    - (i) totally enclosed *noncombustible* raceways,
    - (ii) concealed spaces in 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 nonmetallic raceways conforming to Clause 3.1.5.20.(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 Appendix A.)

(2) The requirement in Clause (1)(a) is considered to be met where the wires and cables exhibit a flame-spread of not more than 1.5 m, a smoke density of not more than 0.5 at peak optical density and a smoke density not more than 0.15 at average optical density when tested in conformance with the Flame and Smoke Test in the Appendix to CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables”, (FT6 Rating).

### 3.1.5.19. Combustible Travelling Cables for Elevators

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

### 3.1.5.20. Nonmetallic Raceways

- (1) Except as provided by Subclause 3.6.4.3.(1)(a)(iv) and subject to limits on size for penetrations of *fire separations* as required by Sentence 3.1.9.3.(2), within a *fire compartment* of a *building* required to be of *noncombustible construction*, totally enclosed nonmetallic raceways not more than 175 mm in outside diameter, or an equivalent rectangular area, are permitted to be used to enclose optical fibre cables and electrical wires and cables, provided, where,
- (a) the wires and cables in the raceways meet or exceed the requirements of Clause 3.1.5.18.(1)(a), the nonmetallic 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) the wires and cables in the raceways do not meet or exceed the requirements of Clause 3.1.5.18.(1)(a), the nonmetallic raceways exhibit a vertical char 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”.

### 3.1.5.21. Wires in Computer Room Floors

- (1) Optical fibre cables and electrical wires and cables with *combustible* insulation, jackets or sheathes, located in the space below a raised floor in a *computer room*, are permitted in a *building* required to be of *noncombustible construction* provided they do not convey flame or continue to burn for more than 1 min when tested in conformance with the Vertical Flame Test in Clause 4.11.1. of CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables”, (FT1 Rating).
- (2) The requirement in Sentence (1) is considered to be met where the wires and cables,
- (a) exhibit a vertical char of not more than 1.5 m when tested in conformance with the Vertical Flame Test – Cables in Cabletrough in Clause 4.11.4. of CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables”, (FT4 Rating), or
  - (b) exhibit a flame-spread of not more than 1.5 m, a smoke density of not more than 0.5 at peak optical density and a smoke density not more than 0.15 at average optical density when tested in conformance with the Flame and Smoke Test in the Appendix to CSA C22.2 No. 0.3, “Test Methods for Electrical Wires and Cables”, (FT6 Rating).

### 3.1.5.22. Combustible Components in Public Pools and Public Spas

(1) *Combustible* fittings and components in a *public pool* or *public spa*, including main drains, piping, skimmers, return inlets, steps, ladder rungs and liners, are permitted in a *building* required to be of *noncombustible construction*.

### 3.1.5.23. Marquees Having Combustible Elements

- (1) Except as permitted in Sentence (2), exterior *marquees*, not greater than 7.5 m from ground level to the top of the *marquee*, having *combustible* elements, other than fabrics or films conforming to Sentence 3.1.16.1.(1), are permitted on a *building* required to be of *noncombustible construction*, provided every opening in the exposed wall of the *building* above the *marquee* is protected with wired glass in accordance with MMAH Supplementary Standard SB-2, “Fire Performance Ratings” where these openings are within,
- (a) 4.5 m horizontally of the *marquee*, and
  - (b) 9 m vertically above the *marquee*.
- (2) The protection required by Sentence (1) is permitted to be waived if the *building* is *sprinklered*.

### 3.1.5.24. Combustible Mezzanines

- (1) In a *building* required to be of *noncombustible construction*, a *mezzanine* located within a *live/work unit* is permitted to be of *combustible construction*, provided the area of the *mezzanine* is not more than 25% of the *floor area* of the *live/work unit* or 20 m<sup>2</sup>, whichever is less, and has no obstructions more than 1 070 mm above the floor.

### 3.1.5.25. Wood Decorative Cladding

- (1) Wood decorative cladding is permitted to be used on exterior *marquee* fascias, of a *storey* having direct access to a *street* or access route, of a *building* required to be of *noncombustible construction*, provided the cladding is *fire-retardant treated wood* that, before testing to CAN/ULC-S102, “Test for Surface Burning Characteristics of Building Materials and Assemblies”, has been conditioned in conformance with ASTM D2898, “Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing”.

### 3.1.5.26. Combustible Solar Collector Systems

- (1) A *combustible* solar collector system is permitted to be installed above the roof of a *building* required to be of *noncombustible construction*.

## 3.1.6. Reserved

## 3.1.7. Fire-Resistance Ratings

### 3.1.7.1. Determination of Ratings

- (1) Except as permitted by Sentence (2) and Article 3.1.7.2., 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 MMAH Supplementary Standard SB-2, “Fire Performance Ratings”.

### 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 3.2.2.83. 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).
- r5 (3) Except for *noncombustible construction* required by Subclauses 3.2.2.43A.(2)(c)(i) and 3.2.2.50A.(2)(c)(i), 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 Appendix A.)
- (2) Openings in a *fire separation* shall be protected with *closures*, shafts or other means in conformance with Articles 3.1.8.4. to 3.1.8.18. and Subsections 3.1.9. and 3.2.8. (See Appendix A.)

### 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, or an exterior wall assembly. (See Appendix A.)

#### 3.1.8.4. Determination of Ratings

- (1) Except as permitted by Sentences (2) and 3.1.8.14.(1), the *fire-protection rating* for a *closure* shall be determined on the basis of the results of tests conducted in conformance with the appropriate provisions in,
- r5 (a) CAN/ULC-S104, “Fire Tests of Door Assemblies”,
  - r5 (b) CAN4-S106-M, “Fire Tests of Window and Glass Block Assemblies”, or
  - (c) CAN/ULC-S112, “Fire Test of Fire-Damper Assemblies”.
- (2) Except as permitted by Sentence 3.1.8.10.(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*.

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### 3.1.9.2. Combustibility of Service Penetrations

(1) Except as permitted by Articles 3.1.9.3. and 3.1.9.4., 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 has been tested incorporating that service equipment. (See Appendix A.)

### 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 nonmetallic raceways conforming to Article 3.1.5.20., optical fibre cables, and electrical wires and cables, single or grouped, with *combustible* insulation, jackets or sheaths that conform to the requirements of Clause 3.1.5.18.(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* electrical 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 160 cm<sup>2</sup>.

(6) *Noncombustible* electrical outlet boxes that penetrate a *fire separation* or a membrane forming part of an assembly required to have a *fire-resistance rating* need not meet the requirements of Article 3.1.9.1. provided,

- (a) they do not exceed,
  - (i) 100 cm<sup>2</sup> each in area, and
  - (ii) an aggregate area of 650 cm<sup>2</sup> in any 9.3 m<sup>2</sup> of surface area, and
- (b) the annular space between the membrane and the box does not exceed 3 mm.

(7) Unless provided with a *fire stop* in accordance with CAN/ULC-S115, “Fire Tests of Firestop Systems”, electrical outlet boxes on opposite sides of a vertical *fire separation* required to have a *fire-resistance rating* shall be,

- (a) separated by a horizontal distance of not less than 600 mm, or
- (b) installed in adjacent stud cavities.

### 3.1.9.4. Combustible Piping Penetrations

(1) Except as permitted by Sentences (3) to (8), *combustible* piping shall not be used if any part of the piping 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*.

(See Appendix A.)

(2) *Combustible* piping that is part of a system described in Sentence (1) shall not be located in a *vertical service space*.

- (3) Except as provided by Sentences (4) to (7), *combustible* piping is permitted to penetrate a *fire separation* required to have a *fire-resistance rating* or is permitted to penetrate a membrane that forms part of an assembly required to have a *fire-resistance rating*, provided 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.
- (4) Except as required by Sentence (7), *combustible* drain piping is permitted to penetrate a horizontal *fire separation*, provided it leads directly from a *noncombustible* water closet through a concrete floor slab and the piping is sealed at the penetration by a *fire stop* in conformance with Clause 3.1.9.1.(1)(a).
- (5) Except as required by Sentence (7), *combustible* piping is permitted to penetrate a vertical or horizontal *fire separation*, provided the *fire compartments* on each side of the *fire separation* are *sprinklered* and the piping is sealed at the penetration by a *fire stop* in conformance with Clause 3.1.9.1.(1)(a).
- (6) Except as required by Sentence (7), *combustible* piping not more than 25 mm in diameter containing chlorine gas is permitted to penetrate a *fire separation* between a chlorine gas *service room* built in conjunction with a *public pool* or *public spa* and the remainder of the *building*, provided the piping is sealed at the penetration by a *fire stop* in conformance with Clause 3.1.9.1.(1)(a).
- (7) Where *combustible* piping penetrates a *firewall* or a horizontal *fire separation* described in Sentence 3.2.1.2.(1), the piping shall be sealed at the penetration by a *fire stop* that has an FT rating not less than the *fire-resistance rating* required for the *firewall* or horizontal *fire separation* when subjected to the fire test method in CAN/ULC-S115, “Fire Tests of Firestop Systems”, and,
- the *fire stop* shall have been tested with a pressure differential of 50 Pa between the exposed and unexposed sides, with the higher pressure on the exposed side, or
  - the *fire compartments* on each side of the *firewall* or horizontal *fire separation* shall be *sprinklered*.
- (8) *Combustible* piping for central vacuum cleaning systems is permitted to penetrate a *fire separation*, provided the installation conforms to the requirements that apply to *combustible* piping specified in Sentence (3).

### 3.1.9.5. Openings Through a Membrane Ceiling

- (1) A membrane ceiling forming part of an assembly assigned a *fire-resistance rating* on the basis of MMAH Supplementary Standard SB-2, “Fire Performance Ratings”, is permitted to be penetrated by openings leading into ducts within the ceiling space provided,
- the ducts are sheet steel, and
  - the amount of openings and their protection conform to the requirements of MMAH Supplementary Standard SB-2, “Fire Performance Ratings”.
- (2) *Fire stop flaps* in ceiling membranes required in Sentence (1) shall conform to CAN/ULC-S112.2, “Fire Test of Ceiling Firestop Flap Assemblies”.

### 3.1.9.6. 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 the 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 the 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,
    - (b) the design conforms to Article 4.1.5.17.,
    - (c) the level of performance of the *firewall* is not less than of masonry or concrete in the areas of,
      - (i) performance during fire conditions,
      - (ii) mechanical damage during the normal use of the *building*, and
      - (iii) resistance to damage from moisture,
    - (d) the *firewall* separates *buildings* or *buildings* with *floor areas* that do not contain,
      - (i) a Group B, Division 1 *major occupancy*, or
      - (ii) a Group B, Division 2 *major occupancy*, and
    - (e) the *firewall* does not separate a *building* regulated by the provisions of Subsection 3.2.6. or a *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A. from another *building* unless the *buildings* on both sides of the *firewall* are *sprinklered*.
- (See Appendix A.)

### 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*.
- (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 two *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 two *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*.

## 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 wall 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 m<sup>2</sup>.
- (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 3.1.5.8.(2), so that the maximum area of a concealed space is not more than 10 m<sup>2</sup>.

### **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 a crawl space conforming to Sentence 3.1.11.6.(1), a horizontal concealed space 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 not more than,
- (a) 600 m<sup>2</sup> 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) 300 m<sup>2</sup> 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 Appendix A.)
- (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.
- r<sub>5</sub> (3) Except as provided by Sentence (4), a horizontal concealed space within a floor assembly or roof assembly of *combustible construction* in a *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A. shall be separated by construction conforming to Article 3.1.11.7. into compartments not more than,
- (a) 600 m<sup>2</sup> 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) 300 m<sup>2</sup> 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.
- r<sub>5</sub> (4) Sentence (3) does not apply if the horizontal concealed space within the floor assembly or roof assembly is entirely filled with *noncombustible* insulation such that any air gap between the top of the insulation and the underside of the floor or roof deck does not exceed 50 mm.

### 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 m<sup>2</sup> 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) materials used to separate concealed spaces into compartments 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 3.1.5.6. 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 3.1.5.8.(2), materials used to separate concealed spaces into compartments are permitted to be,

- (a) solid lumber not less than 38 mm thick,
- (b) phenolic bonded plywood, waferboard, or strandboard not less than 12.5 mm thick with joints supported, or
- (c) two thicknesses of lumber, 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 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 Appendix A.)

(7) In a *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 wythe wall assembly formed at the intersection of the floor assembly and the walls, provided the insulation board,

- (a) has a density not less than 45 kg/m<sup>3</sup>,
- (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.

## 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 no fewer than three tests conducted in conformance with CAN/ULC-S102, “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 no fewer 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,

- (4) The *flame-spread rating* limits specified in Sentences (1) to (3) apply to *occupancies* in the corridor as well as to the corridor itself.
- (5) Except in a *floor area* that is *sprinklered* and as permitted 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) The *flame-spread rating* limits specified in Sentence (5) do not apply to a corridor in which the *flame-spread rating* is not more than 150 provided the *floor area* is *sprinklered*.

### 3.1.13.7. High Buildings

- (1) Except as permitted by Sentences (2) and (3), 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. to 3.1.13.6. and to the *flame-spread rating* and smoke developed classification values in Table 3.1.13.7.
- (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* and the sprinkler system is electrically supervised in conformance with Sentences 3.2.4.10.(3) and 3.2.4.17.(1).
- (3) Trim, millwork and doors 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 *flame-spread rating* not more than 150,
  - a smoke developed classification not more than 300, and
  - an aggregate area not more than 10% of the area of the wall or ceiling on which they occur.

Table 3.1.13.7.  
Flame-Spread Rating and Smoke Developed Classification in a High Building  
Forming Part of Sentences 3.1.13.7.(1) and (2)

Location or Element	Maximum <i>Flame-Spread Rating</i>			Maximum Smoke Developed Classification		
	Wall Surface	Ceiling Surface <sup>(1)</sup>	Floor Surface	Wall Surface	Ceiling Surface <sup>(1)</sup>	Floor Surface
<i>Exit</i> stairways, vestibules to <i>exit</i> stairs and lobbies described in Sentence 3.4.4.2.(2)	25	25	25	50	50	50
Corridors not within <i>suites</i>	(2)	(2)	300	100	50	500
Elevator cars	75	75	300	450	450	450
Elevator vestibules	25	25	300	100	100	300
<i>Service spaces</i> and <i>service rooms</i>	25	25	25	50	50	50
Other locations and elements	(2)	(2)	No limit	300	50	No limit
Column 1	2	3	4	5	6	7

**Notes to Table 3.1.13.7.:**

- See Sentence 3.1.13.4.(1) for lighting elements.
- Other requirements of this Part apply.

- (4) Except as permitted in Sentences (5) to (7), *plumbing fixtures* in a *building* regulated by the provisions of Subsection 3.2.6. shall have a smoke developed classification not more than 300.
- (5) A *plumbing fixture* that is not located in a Group B *occupancy* need not comply with Sentence (4) if the *building* is *sprinklered*.
- (6) A *plumbing fixture* may have a smoke developed classification more than 300 but not more than 500 if,
- (a) it is in a room where the wall surfaces have a smoke developed classification not more than 200, and
  - (b) it is located in,
    - (i) a Group C *occupancy*, or
    - (ii) a Group B *occupancy* and the *building* is *sprinklered*.
- (7) A therapeutic bathing system in a Group B *occupancy* need not comply with Sentence (4) if the room in which it is located,
- (a) does not open directly into patients' or residents' sleeping rooms, and
  - (b) is *sprinklered*.

### 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

- r<sub>5</sub> (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,
- fire-retardant treated wood*,
  - heavy timber construction*,
  - noncombustible construction*, or
  - a combination of the items described in Clauses (a) to (c).

#### 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,
- it supports a *combustible* material above the deck that could propagate a fire beneath the roof deck assembly, and
  - the deck is used to comply with the requirements of Sentences 3.2.2.25.(2), 3.2.2.32.(2), 3.2.2.53.(2), 3.2.2.59.(2), 3.2.2.70.(2) and 3.2.2.76.(2) for *noncombustible construction*.
- (2) The requirements of Sentence (1) are waived provided,
- 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 3.1.5.12.(2)(c) to (e) that is located on the underside of the *combustible* material or beneath the roof deck,
  - the *building* is *sprinklered*, or
  - 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”. (See Appendix A.)

#### 3.1.15.2. Roof Coverings

- r<sub>5</sub> (1) Except as provided by 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 tent,
  - an *air-supported structure*, or
  - a *building* of Group A, Division 2 *occupancy* not more than 2 *storeys* in *building height* and not more than 1 000 m<sup>2</sup> in *building area*, provided the roof covering is underlaid with *noncombustible* material.
- r<sub>5</sub> (3) *Combustible* roof coverings on *buildings* within the scope of Article 3.2.2.43A. or 3.2.2.50A. shall have a Class A classification.

## 3.1.16. Fabrics

### 3.1.16.1. Fabric Awnings, 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*, or of a *building* or part of a *building* not having a *floor area*, shall be based on,

- (a) the number of seats in an *assembly occupancy* having fixed seats,
- (b) two persons per sleeping room or sleeping area in a *dwelling unit* or *suite*, or
- (c) the number of persons,
  - (i) for which the area is designed, or
  - (ii) determined from Table 3.1.17.1. for *occupancies* other than those described in Clauses (a) and (b).

(2) If a *floor area* or part of it 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.

(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 that gives the greatest number of persons for the *occupancies* concerned.

(5) Except as provided by Sentence (6) or (7), in dining, alcoholic beverage and cafeteria spaces the *occupant load* shall be determined from Table 3.1.17.1.

(6) The *occupant load* in Sentence (5) is permitted to be the number of persons for which the space is designed.

(7) The *occupant load* in Sentence (6) shall be not more than that determined by using an area of 0.6 m<sup>2</sup> per person.



(4) Sentences (1) to (3) do not apply to a *building* containing electrical equipment and electrical installations used exclusively in the generation, transformation or transmission of electrical power or energy intended for sale or distribution to the public.

### **3.1.20. Glass in Guards**

#### **3.1.20.1. Glass**

(1) Except as provided in Sentence 3.3.4.7.(1), glass in *guards* shall conform to MMAH Supplementary Standard SB-13, “Glass in Guards”.

## **Section 3.2. Building Fire Safety**

### **3.2.1. General**

#### **3.2.1.1. Exceptions in Determining Building Height**

- e<sub>3</sub> (1) A rooftop enclosure provided for elevator machinery, a stairway or a *service room* used for no purpose other than for service to the *building*, shall not be considered as a *storey* in calculating the *building height*.
- (2) Space under tiers of seats in a *building* of the arena type shall not be considered as adding to the *building height* provided the space is used only for dressing rooms, concession stands and similar purposes incidental to the *major occupancy* of the *building*.
- (3) Except as required by Sentence (5), the space above a *mezzanine* need not be considered as a *storey* in calculating *building height* provided,
- (a) the aggregate area of *mezzanines* that are not superimposed does not exceed 40% of the open area of the room in which they are located, and (See Appendix A.)
  - (b) except as permitted in Sentence (8) and Sentence 3.3.2.11.(3) the space above the *mezzanine* is used as an open area without *partitions* or subdividing walls higher than 1 070 mm above the *mezzanine* floor.
- (4) Except as required by Sentence (5), the space above a *mezzanine* need not be considered as a *storey* in calculating the *building height* provided,
- e<sub>3</sub> (a) the aggregate area of *mezzanines* that are not superimposed and do not meet the conditions of Sentence (3) does not exceed 10% of the *floor area* in which they are located, and
- (b) the area of *mezzanine* in a *suite* does not exceed 10% of the area of that *suite*.
- (5) Except as permitted by Sentences (6) and (7), each level of *mezzanine* that is partly or wholly superimposed above the first level of *mezzanine* shall be considered as a *storey* in calculating the *building height*.
- (6) Platforms intended solely for periodic inspection and elevated catwalks need not be considered as floor assemblies or *mezzanines* for the purpose of determining *building height* provided,
- (a) they are not used for storage,
  - (b) they are constructed with *noncombustible* materials unless the *building* is permitted to be of *combustible construction*, and
  - (c) where they are intended to be occupied, they have an *occupant load* of not more than four persons.
- (7) *Mezzanines*, elevated walkways and platforms that are intended to be occupied in Group F, Division 2 or 3 *major occupancies* need not be considered as *storeys* in calculating *building height* provided,
- (a) the *building* is of *noncombustible construction*, and
  - (b) the *occupant load* is not more than four persons.

(8) The space above a *mezzanine* conforming to Sentence (3) is permitted to include an enclosed space whose area does not exceed 10% of the open area of the room in which the *mezzanine* is located, provided the enclosed space does not obstruct visual communication between the open space above the *mezzanine* and the room in which it is located.

(9) A *service space* in which facilities are included to permit a person to enter and to undertake maintenance and other operations pertaining to *building services* from within the *service space* need not be considered a *storey* if it conforms to Articles 3.2.5.15. and 3.3.1.23. and Sentences 3.2.4.20.(12), 3.2.7.3.(2), 3.3.1.3.(7), 3.4.2.4.(3) and 3.4.4.4.(9). (See Appendix A.)

### 3.2.1.2. Storage Garage Considered as a Separate Building

(1) A *basement* used primarily as a *storage garage* is permitted to be considered as a separate *building* for the purposes of Subsection 3.2.2., provided the floor and roof assemblies above the *basement* and, except as permitted by Sentence (2), the exterior walls of the *basement* above the adjoining ground level are constructed as *fire separations* of,

- (a) masonry or concrete having a *fire-resistance rating* not less than 2 h, or
- (b) *noncombustible construction* having a *fire-resistance rating* of not less than 2 h, where the *building* conforms to Clauses 3.1.10.2.(4)(a) and (c) to (e).

(2) The exterior wall of a *basement* that is required to be a *fire separation* with a *fire-resistance rating* in accordance with Sentence (1) is permitted to be penetrated by openings that are not protected by *closures* provided,

- (a) the *storage garage* is *sprinklered*,
- (b) every opening in the exterior wall is separated from *storeys* above the opening by a projection of the floor or roof assembly above the *basement*, extending not less than,
  - (i) 1 m beyond the exterior face of the *storage garage* if the upper *storeys* are required to be of *noncombustible construction*, or
  - (ii) 2 m beyond the exterior face of the *storage garage* if the upper *storeys* are permitted to be of *combustible construction*, or
- (c) the exterior walls of any *storeys* located above the floor or roof assembly referred to in Sentence (1) are recessed behind the outer edge of the assembly by not less than,
  - (i) 1 m if the upper *storeys* are required to be of *noncombustible construction*, or
  - (ii) 2 m if the upper *storeys* are permitted to be of *combustible construction*.

(3) The floor or roof assembly projection referred to in Clause (2)(b) shall have a *fire-resistance rating* not less than 2 h and shall have no openings within the projection

### 3.2.1.3. Roof Considered as a Wall

- †<sub>3</sub> (1) For the purposes of this Section any part of a roof that is pitched at an angle of 60° or more to the horizontal and is adjacent to a space intended for occupancy within a *building* shall be considered as part of an exterior wall of the *building*.

### 3.2.1.4. Floor Assembly Over Basement

(1) Except as permitted by Sentence 3.2.2.42.(3), 3.2.2.43.(3), 3.2.2.44.(3), 3.2.2.45.(3), 3.2.2.46.(3), 3.2.2.47.(3) or 3.2.2.48.(3), a floor assembly immediately above a *basement* shall be constructed as a *fire separation* having a *fire-resistance rating* conforming to the requirements of Articles 3.2.2.20. to 3.2.2.83. for a floor assembly, but not less than 45 min.

(2) All *loadbearing* walls, columns and arches supporting a floor assembly immediately above a *basement* shall have a *fire-resistance rating* not less than that required by Sentence (1) for the floor assembly.

### 3.2.1.5. Fire Containment in Basements

- (1) Except as permitted by Sentences (2) and 3.2.2.15.(3), in a *building* in which an automatic sprinkler system is not required to be installed by Articles 3.2.2.20. to 3.2.2.83., every *basement* shall,
- (a) be *sprinklered*, or
  - (b) be subdivided into *fire compartments* not more than 600 m<sup>2</sup> in area by a *fire separation* having a *fire-resistance rating* not less than that required for the floor assembly immediately above the *basement*.
- (2) An *open-air storey* need not conform to Sentence (1).

### 3.2.1.6. Mezzanines

- (1) The floor assembly of a *mezzanine* that is required to be considered as a *storey* in calculating *building height* shall be constructed in conformance with the *fire separation* requirements for floor assemblies in Articles 3.2.2.20. to 3.2.2.83.

## 3.2.2. Building Size and Construction Relative to Occupancy

### 3.2.2.1. Application

- (1) Except as permitted by Article 3.2.2.3., a *building* shall be constructed in conformance with this Subsection to prevent fire spread and collapse caused by the effects of fire.

### 3.2.2.2. Special and Unusual Structures

- (1) A structure that cannot be identified with the characteristics of a *building* in Articles 3.2.2.20. to 3.2.2.83. shall be protected against fire spread and collapse in conformance with good fire protection engineering practice. (See Appendix A.)

### 3.2.2.3. Exceptions to Structural Fire Protection

- (1) Fire protection is not required for,
- (a) steel lintels above openings not more than 2 m wide in *loadbearing* walls and not more than 3 m wide in non-*loadbearing* walls,
  - (b) steel lintels above openings more than 2 m wide in *loadbearing* walls and more than 3 m wide in non-*loadbearing* walls, provided the lintels are supported at intervals of not more than 2 m by structural members with the required *fire-resistance rating*,
  - (c) the bottom flanges of shelf angles and plates that are not a part of the structural frame,
  - (d) steel members for framework around elevator hoistway doorways, steel for the support of elevator and dumbwaiter guides, counterweights and other similar equipment, that are entirely enclosed in a hoistway and are not a part of the structural frame of the *building*,
  - (e) steel members of stairways and escalators that are not a part of the structural frame of a *building*,
  - (f) steel members of porches, exterior balconies, exterior stairways, fire escapes, cornices, *marquees* and other similar appurtenances, provided they are outside an exterior wall of a *building*, and
  - (g) *loadbearing* steel or concrete members wholly or partly outside a *building* face in a *building* not more than 4 *storeys* in *building height* and classified as Group A, B, C, D or F, Division 3 *major occupancy* provided the members are,
    - (i) not less than 1 m away from any *unprotected opening* in an exterior wall, or
    - (ii) shielded from heat radiation in the event of a fire within the *building* by construction that will provide the same degree of protection that would be necessary if the member was located inside the *building*, with the protection extending on either side of the member a distance equal to the projection of the member from the face of the wall.

### 3.2.2.4. Buildings with Multiple Major Occupancies

- (1) The requirements restricting fire spread and collapse for a *building* of a single *major occupancy* classification are provided in this Subsection according to its *building height* and *building area*.

(2) If a *building* contains more than one *major occupancy*, classified in more than one Group or Division, the requirements of this Subsection concerning *building* size and construction relative to *major occupancy* shall apply according to Articles 3.2.2.5. to 3.2.2.8.

### 3.2.2.5. Applicable Building Height and Area

(1) In determining the fire safety requirements of a *building* in relation to each of the *major occupancies* contained in it, the *building height* and *building area* of the entire *building* shall be used.

### 3.2.2.6. Multiple Major Occupancies

r<sub>5</sub> (1) Except as permitted by Articles 3.2.2.7. and 3.2.2.8. and Sentences 3.2.2.43A.(5) and 3.2.2.50A.(4), in a *building* containing more than one *major occupancy*, the requirements of this Subsection for the most restricted *major occupancy* contained shall apply to the whole *building*.

### 3.2.2.7. Superimposed Major Occupancies

r<sub>5</sub> (1) Except as permitted by Article 3.2.2.8. and Sentences 3.2.2.43A.(5) and 3.2.2.50A.(4), in a *building* in which one *major occupancy* is located entirely above another *major occupancy*, the requirements in this Subsection for each portion of the *building* containing a *major occupancy* shall apply to that portion as if the entire *building* was of that *major occupancy*.

(2) If one *major occupancy* is located above another *major occupancy*, the *fire-resistance rating* of the floor assembly between the *major occupancies* shall be determined on the basis of the requirements of this Subsection for the lower *major occupancy*.

### 3.2.2.8. Exceptions for Major Occupancies

(1) In a *building* in which the aggregate area of all *major occupancies* in a particular Group or Division is not more than 10% of the *floor area* of the *storey* in which they are located, these *major occupancies* need not be considered as *major occupancies* for the purposes of this Subsection, provided they are not classified as Group F, Division 1 or 2 *occupancies*.

(2) A helicopter landing area on the roof of a *building* need not be considered a *major occupancy* for purposes of Subsection 3.2.2. where such landing area is not more than 10% of the area of the roof.

### 3.2.2.9. Crawl Spaces

(1) For the purposes of Articles 3.2.1.4. and 3.2.1.5., a crawl space shall be considered as a *basement* if it is,

- more than 1 800 mm high between the lowest part of the floor assembly and the ground or other surface below,
- used for any *occupancy*,
- used for the passage of *flue pipes*, or
- used as a *plenum* in *combustible construction*.

(2) A floor assembly immediately above a crawl space is not required to be constructed as a *fire separation* and is not required to have a *fire-resistance rating* provided the crawl space is not required to be considered as a *basement* by Sentence (1).

### 3.2.2.10. Streets

(1) Every *building* shall face a *street* located in conformance with the requirements of Articles 3.2.5.4 and 3.2.5.5 for access routes.

(2) For the purposes of Subsections 3.2.2. and 3.2.5. an access route conforming to Subsection 3.2.5. is permitted to be considered as a *street*.

- r<sub>5</sub> (3) A *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A. is considered to face one *street* provided not less than 10% of the *building* perimeter is located within 15 m of a *street* or *streets*.
- r<sub>5</sub> (4) A *building* is considered to face two *streets* provided not less than 50% of the *building* perimeter is located within 15 m of a *street* or *streets*.
- r<sub>5</sub> (5) A *building* is considered to face three *streets* provided not less than 75% of the *building* perimeter is located within 15 m of a *street* or *streets*.
- r<sub>5</sub> (6) Enclosed spaces, tunnels, bridges and similar structures, even though used for vehicular or pedestrian traffic, are not considered as *streets* for the purpose of this Part.

### 3.2.2.11. Exterior Balconies

- (1) An exterior balcony shall be constructed in accordance with the type of construction required by Articles 3.2.2.20. to 3.2.2.83., as applicable to the *occupancy* classification of the *building*.

### 3.2.2.12. Exterior Passageways

- (1) An elevated exterior passageway used as part of a *means of egress* shall conform to the requirements of Articles 3.2.2.20. to 3.2.2.83. for *mezzanines*.

### 3.2.2.13. Occupancy on Roof

- (1) A portion of a roof that supports an *occupancy* shall be constructed in conformance with the *fire separation* requirements of Articles 3.2.2.20. to 3.2.2.83. for floor assemblies.

### e<sub>3</sub> 3.2.2.14. Rooftop Enclosures

- (1) A rooftop enclosure for elevator machinery or for a *service room* shall be constructed in accordance with the type of construction required by Articles 3.2.2.20. to 3.2.2.83.
- (2) A rooftop enclosure for elevator machinery or for a *service room*, not more than 1 *storey* high, is not required to have a *fire-resistance rating*.
- (3) A rooftop enclosure for a stairway shall be constructed in accordance with the type of construction required by Articles 3.2.2.20. to 3.2.2.83.
- (4) A rooftop enclosure for a stairway need not have a *fire-resistance rating* nor be constructed as a *fire separation*.

### 3.2.2.15. Storeys Below Ground

- (1) If a *building* is erected entirely below the adjoining finished ground level and does not extend more than 1 *storey* below that ground level, the minimum precautions against fire spread and collapse shall be the same as are required for *basements* under a *building* of 1 *storey* in *building height* having the same *occupancy* and *building area*.
- (2) If any portion of a *building* is erected entirely below the adjoining finished ground level and extends more than 1 *storey* below that ground level, the following minimum precautions against fire spread and collapse shall be taken:
  - (a) except as permitted by Sentence (3), the *basements* shall be *sprinklered*,
  - (b) a floor assembly below the ground level shall be constructed as a *fire separation* with a *fire-resistance rating* not less than,
    - (i) 3 h if the *basements* are intended for use as Group E or Group F, Division 1 or 2 *occupancies*, or
    - (ii) 2 h if the *basements* are not intended for use as Group E or Group F, Division 1 or 2 *occupancies*, and

- (c) all *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the construction that they support.
- (3) If the *first storey* of a *building* is not required to be *sprinklered*, sprinklers are not required in the *storey* immediately below the *first storey*, provided the *storey* below,
  - (a) contains only *residential occupancies*, and
  - (b) has at least one unobstructed access opening conforming to Sentence 3.2.5.1.(2) installed on that *storey* for each 15 m of wall length in at least one wall required by this Subsection to face a *street*.

### 3.2.2.16. Heavy Timber Roof Permitted

- (1) Unless otherwise permitted by Articles 3.2.2.20. to 3.2.2.83., a roof assembly in a *building* up to 2 *storeys* in *building height* is permitted to be of *heavy timber construction* regardless of *building area* or type of construction required, provided the *building* is *sprinklered*.
- (2) If Sentence (1) permits a roof assembly to be of *heavy timber construction*, structural members in the *storey* immediately below the roof assembly are permitted to be of *heavy timber construction*.

### 3.2.2.17. Sprinklers in Lieu of Roof Rating

- r<sub>5</sub> (1) Except as provided by Sentence (2), the requirements in Articles 3.2.2.20. to 3.2.2.83. for roof assemblies to have a *fire-resistance rating* are permitted to be waived provided,
  - (a) the *building* is *sprinklered*,
  - (b) the sprinkler system in Clause (a) is electrically supervised in conformance with Sentence 3.2.4.10.(3), and
  - (c) the operation of the sprinkler system in Clause (a) will cause a signal to be transmitted to the fire department in conformance with Sentence 3.2.4.8.(4).
- r<sub>5</sub> (2) The *fire-resistance rating* of roof assemblies required by Clause 3.2.2.43A.(2)(b) or 3.2.2.50A.(2)(b) is not permitted to be waived.

### 3.2.2.18. Automatic Sprinkler System Required

- (1) If an automatic sprinkler system is required by Articles 3.2.2.20. to 3.2.2.83., the system shall conform to the requirements of Articles 3.2.4.8. to 3.2.4.10. and 3.2.5.13. (See Appendix A.)

### 3.2.2.19. Buildings Containing Impeded Egress Zones

- (1) A *building* containing an *impeded egress zone* and conforming to the appropriate requirements of Articles 3.2.2.20. to 3.2.2.83. is not required to conform to the requirements of Articles 3.2.2.36. and 3.2.2.37. for a Group B, Division 1 *major occupancy* provided,
  - (a) the *building* is *sprinklered*,
  - (b) it is not more than 1 *storey* in *building height*,
  - (c) it does not include,
    - (i) a *contained use area*,
    - (ii) sleeping accommodation,
    - (iii) a *high hazard industrial occupancy*, or
    - (iv) a *mercantile occupancy*,
  - (d) the *building area* is not more than 6 400 m<sup>2</sup> if the *building* includes a *medium hazard industrial occupancy*,
  - (e) the *impeded egress zone* does not extend beyond the boundaries of the *fire compartment* in which it is located, and
  - (f) the *occupant load* of the *impeded egress zone* is not more than 100.

- (2) Except as permitted by Article 3.2.2.16., the *building* referred to in Sentence (1) shall be of *noncombustible construction*, and,
  - (a) except as permitted by Sentence 3.2.2.7.(1), the *building* shall be *sprinklered*,
  - (b) floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 2 h,
  - (c) *mezzanines* shall have a *fire-resistance rating* not less than 1 h, and
  - (d) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.

### **3.2.2.39. Group B, Division 2 or Division 3, up to 3 Storeys, Sprinklered**

- (1) A *building* classified as Group B, Division 2 or Division 3 is permitted to conform to Sentence (2) provided,
  - (a) except as permitted by Sentence 3.2.2.7.(1), the *building* is *sprinklered*,
  - (b) it is not more than 3 *storeys* in *building height*, and
  - (c) it has a *building area*,
    - (i) that is not limited if the *building* is not more than 1 *storey* in *building height*,
    - (ii) not more than 12 000 m<sup>2</sup> if 2 *storeys* in *building height*, or
    - (iii) not more than 8 000 m<sup>2</sup> if 3 *storeys* in *building height*.
- (2) Except as permitted by Article 3.2.2.16., the *building* referred to in Sentence (1) shall be of *noncombustible construction*, and,
  - (a) floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 1 h,
  - (b) *mezzanines* shall have a *fire-resistance rating* not less than 1 h, and
  - (c) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.

### **3.2.2.40. Group B, Division 2 or Division 3, up to 2 Storeys, Sprinklered**

- (1) A *building* classified as Group B, Division 2 or Division 3 is permitted to conform to Sentence (2) provided,
  - (a) except as permitted by Sentence 3.2.2.7.(1), the *building* is *sprinklered*,
  - (b) it is not more than 2 *storeys* in *building height*, and
  - (c) it has a *building area* not more than,
    - (i) 2 400 m<sup>2</sup> if 1 *storey* in *building height*, or
    - (ii) 1 600 m<sup>2</sup> if 2 *storeys* in *building height*.
- (2) The *building* referred to in Sentence (1) is permitted to be of *combustible construction* or *noncombustible construction* used singly or in combination, and,
  - (a) floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 45 min,
  - (b) *mezzanines* shall have, if of *combustible construction*, a *fire-resistance rating* not less than 45 min, and
  - (c) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.

### **3.2.2.41. Group B, Division 2 or Division 3, 1 Storey, Sprinklered**

- (1) A *building* classified as Group B, Division 2 or Division 3 is permitted to be of *combustible construction* or *noncombustible construction* used singly or in combination, provided,
  - (a) except as permitted by Sentence 3.2.2.7.(1), the *building* is *sprinklered*,
  - (b) it is not more than 1 *storey* in *building height*, and
  - (c) it has a *building area* not more than 500 m<sup>2</sup>.

### **3.2.2.42. Group C, Any Height, Any Area, Sprinklered**

- (1) Except as permitted by Articles 3.2.2.43. to 3.2.2.48., a *building* classified as Group C shall conform to Sentence (2).

- (2) Except as permitted by Article 3.2.2.16., the *building* referred to in Sentence (1) shall be of *noncombustible construction*, and,
- (a) except as permitted by Sentence 3.2.2.7.(1), the *building* shall be *sprinklered*,
  - (b) except as permitted by Sentence (3), floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 2 h,
  - (c) *mezzanines* shall have a *fire-resistance rating* not less than 1 h, and
  - (d) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.
- (3) In a *building* that contains *dwelling units* that have more than 1 *storey*, subject to the requirements of Sentence 3.3.4.2.(3), the floor assemblies, including floors over *basements*, which are entirely contained within these *dwelling units*, shall have a *fire-resistance rating* not less than 1 h but need not be constructed as *fire separations*.

### r<sub>5</sub> 3.2.2.43. Group C, up to 6 Storeys, Sprinklered, Noncombustible Construction

- (1) A *building* classified as Group C is permitted to conform to Sentence (2) provided,
- (a) except as permitted by Sentence 3.2.2.7.(1), the *building* is *sprinklered*,
  - (b) it is not more than 6 *storeys* in *building height*, and
  - (c) it has a *building area*,
    - (i) that is not limited if the *building* is not more than 2 *storeys* in *building height*,
    - (ii) not more than 12 000 m<sup>2</sup> if 3 *storeys* in *building height*,
    - (iii) not more than 9 000 m<sup>2</sup> if 4 *storeys* in *building height*,
    - (iv) not more than 7 200 m<sup>2</sup> if 5 *storeys* in *building height*, or
    - (v) not more than 6 000 m<sup>2</sup> if 6 *storeys* in *building height*.
- (2) Except as permitted by Article 3.2.2.16., the *building* referred to in Sentence (1) shall be of *noncombustible construction*, and,
- (a) except as permitted by Sentence (3), floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 1 h,
  - (b) *mezzanines* shall have a *fire-resistance rating* not less than 1 h, and
  - (c) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.
- (3) In a *building* that contains *dwelling units* that have more than 1 *storey*, subject to the requirements of Sentence 3.3.4.2.(3), the floor assemblies, including floors over *basements*, which are entirely contained within these *dwelling units*, shall have a *fire-resistance rating* not less than 1 h but need not be constructed as *fire separations*.

### r<sub>5</sub> 3.2.2.43A. Group C, up to 6 Storeys, Sprinklered, Combustible Construction

- (1) A *building* classified as Group C is permitted to conform to Sentence (2) provided,
- (a) it is *sprinklered*,
  - (b) it is not more than 6 *storeys* in *building height*,
  - (c) it has a height of not more than 18 m, measured between the floor level of the *first storey* and the floor level of the uppermost *storey* or *mezzanine* that is not a rooftop enclosure, provided for elevator machinery, a stairway or a *service room* used for no purpose other than for service to the *building*, and
  - (d) it has a *building area* of not more than,
    - (i) 9 000 m<sup>2</sup> if 1 *storey* in *building height*,
    - (ii) 4 500 m<sup>2</sup> if 2 *storeys* in *building height*,
    - (iii) 3 000 m<sup>2</sup> if 3 *storeys* in *building height*,
    - (iv) 2 250 m<sup>2</sup> if 4 *storeys* in *building height*,
    - (v) 1 800 m<sup>2</sup> if 5 *storeys* in *building height*, or
    - (vi) 1 500 m<sup>2</sup> if 6 *storeys* in *building height*.



- (2) The *building* referred to in Sentence (1) is permitted to be of *combustible construction* or *noncombustible construction*, used singly or in combination, and,
- (a) except as permitted by Sentence (3), floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 1 h,
  - (b) roof assemblies shall have a *fire-resistance rating* not less than 1 h,
  - (c) except as provided by Sentence (4), where the roof assembly has a height greater than 25 m measured from the floor level of the *first storey* to the highest point of the roof assembly, the roof assembly shall,
    - (i) be of *noncombustible construction*, or
    - (ii) be constructed of *fire-retardant treated wood* conforming to Article 3.1.4.5.,
  - (d) *mezzanines* shall have a *fire-resistance rating* not less than 1 h,
  - (e) the *fire separation* of *exits* described in Sentence 3.4.4.1.(3) shall be of *noncombustible construction*, and
  - (f) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.
- (3) In a *building* that contains *dwelling units* that have more than 1 *storey*, subject to the requirements of Sentence 3.3.4.2.(3), the floor assemblies, including floors over *basements*, which are entirely contained within these *dwelling units*, shall have a *fire-resistance rating* not less than 1 h but need not be constructed as *fire separations*.
- (4) The construction of non-contiguous roof assemblies at different elevations is permitted to be evaluated separately to determine which roof assemblies are required to be constructed in accordance with Clause (2)(c).
- (5) Group A, Division 2 *major occupancies*, Group E *major occupancies* and *storage garages* located in a *building* within the scope of this Article are permitted to be constructed in accordance with this Article provided they are located below the third *storey* of the *building*. (See Appendix A.)

### **3.2.2.44. Group C, up to 4 Storeys, Noncombustible Construction**

- (1) A *building* classified as Group C is permitted to conform to Sentence (2) provided,
- (a) it is not more than,
    - (i) 3 *storeys* in *building height*, or
    - (ii) 4 *storeys* in *building height* provided there is not more than one *dwelling unit* above another *dwelling unit*, and vertical *fire separations* of adjacent *dwelling units* conform to Sentence (4), and
  - (b) it has a *building area* not more than the value in Table 3.2.2.44.
- (2) The *building* referred to in Sentence (1) shall be of *noncombustible construction*, and,
- (a) except as permitted by Sentence (3), floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 1 h,
  - (b) *mezzanines* shall have a *fire-resistance rating* not less than 1 h,
  - (c) roof assemblies shall have a *fire-resistance rating* not less than 1 h, and
  - (d) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.

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- (a) except as permitted by Sentences (3) and (4), floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 45 min,
- (b) *mezzanines* shall have, if of *combustible construction*, a *fire-resistance rating* not less than 45 min, and
- (c) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.

(3) In a *building* that contains *dwelling units* that have more than 1 *storey*, subject to the requirements of Sentence 3.3.4.2.(3), the floor assemblies, including floors over *basements*, that are entirely contained within these *dwelling units*, shall have a *fire-resistance rating* not less than 45 min but need not be constructed as *fire separations*.

(4) In a *building* in which there is no *dwelling unit* above another *dwelling unit*, the *fire-resistance rating* for floor assemblies entirely within the *dwelling unit* is waived.

r1 (5) A retirement home regulated under the *Retirement Homes Act, 2010* shall be *sprinklered*.

### **3.2.2.48. Group C, up to 3 Storeys, Sprinklered**

(1) A *building* classified as Group C is permitted to conform to Sentence (2) provided,

- (a) except as permitted by Sentence 3.2.2.7.(1), the *building* is *sprinklered*,
- (b) it is not more than 3 *storeys* in *building height*, and
- (c) it has a *building area* not more than,
  - (i) 5 400 m<sup>2</sup> if 1 *storey* in *building height*,
  - (ii) 2 700 m<sup>2</sup> if 2 *storeys* in *building height*, or
  - (iii) 1 800 m<sup>2</sup> if 3 *storeys* in *building height*.

(2) The *building* referred to in Sentence (1) is permitted to be of *combustible construction* or *noncombustible construction* used singly or in combination, and,

- (a) except as permitted by Sentences (3) and (4), floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 45 min,
- (b) *mezzanines* shall have, if of *combustible construction* a *fire-resistance rating* not less than 45 min, and
- (c) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.

(3) In a *building* that contains *dwelling units* that have more than 1 *storey*, subject to the requirements of Sentence 3.3.4.2.(3), the floor assemblies, including floors over *basements*, that are entirely contained within these *dwelling units*, shall have a *fire-resistance rating* not less than 45 min but need not be constructed as *fire separations*.

(4) In a *building* in which there is no *dwelling unit* above another *dwelling unit*, the *fire-resistance rating* for floor assemblies entirely within the *dwelling unit* is waived.

### **3.2.2.49. Group D, Any Height, Any Area**

(1) Except as permitted by Articles 3.2.2.50. to 3.2.2.56., a *building* classified as Group D shall conform to Sentence (2).

(2) Except as permitted by Article 3.2.2.16., the *building* referred to in Sentence (1) shall be of *noncombustible construction*, and,

- (a) except as permitted by Sentence 3.2.2.7.(1), the *building* shall be *sprinklered* if it is regulated by Subsection 3.2.6.,
- (b) floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 2 h,
- (c) *mezzanines* shall have a *fire-resistance rating* not less 1 h,
- (d) if the *building* is not *sprinklered*, roof assemblies shall have a *fire-resistance rating* not less than 1 h, except that in a *building* not more than 1 *storey* in *building height* this requirement is waived, and
- (e) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.

### 3.2.2.50. Group D, up to 6 Storeys

- (1) A *building* classified as Group D is permitted to conform to Sentence (2) provided,
- (a) it is not more than 6 *storeys* in *building height*, and
  - (b) it has a *building area* not more than the value in Table 3.2.2.50.

Table 3.2.2.50.  
Maximum Building Area, Group D, up to 6 Storeys  
Forming Part of Sentence 3.2.2.50.(1)

No. of <i>Storeys</i>	Maximum Area, m <sup>2</sup>		
	Facing 1 <i>Street</i>	Facing 2 <i>Streets</i>	Facing 3 <i>Streets</i>
1	not limited	not limited	not limited
2	7 200	not limited	not limited
3	4 800	6 000	7 200
4	3 600	4 500	5 400
5	2 800	3 600	4 320
6	2 400	3 000	3 600
Column 1	2	3	4

- (2) The *building* referred to in Sentence (1) shall be of *noncombustible construction*, and,
- (a) floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 1 h,
  - (b) *mezzanines* shall have a *fire-resistance rating* not less than 1 h,
  - (c) roof assemblies shall have a *fire-resistance rating* not less than 1 h, except that in a *building* not more than 1 *storey* in *building height* this requirement is waived, and
  - (d) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.

**r5 3.2.2.50A. Group D, up to 6 Storeys, Sprinklered, Combustible Construction**

- (1) A *building* classified as Group D is permitted to conform to Sentence (2) provided,
  - (a) it is *sprinklered*,
  - (b) it is not more than 6 *storeys* in *building height*,
  - (c) it has a height of not more than 18 m, measured between the floor level of the *first storey* and the floor level of the uppermost *storey* or *mezzanine* that is not a rooftop enclosure, provided for elevator machinery, a stairway or a *service room* used for no purpose other than for service to the *building*, and
  - (d) it has a *building area* of not more than,
    - (i) 18 000 m<sup>2</sup> if 1 *storey* in *building height*,
    - (ii) 9 000 m<sup>2</sup> if 2 *storeys* in *building height*,
    - (iii) 6 000 m<sup>2</sup> if 3 *storeys* in *building height*,
    - (iv) 4 500 m<sup>2</sup> if 4 *storeys* in *building height*,
    - (v) 3 600 m<sup>2</sup> if 5 *storeys* in *building height*, or
    - (vi) 3 000 m<sup>2</sup> if 6 *storeys* in *building height*.
- (2) The *building* referred to in Sentence (1) is permitted to be of *combustible construction* or *noncombustible construction* used singly or in combination, and,
  - (a) floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 1 h,
  - (b) roof assemblies shall have a *fire-resistance rating* not less than 1 h,
  - (c) except as provided by Sentence (3), where the roof assembly has a height greater than 25 m measured from the floor level of the *first storey* to the highest point of the roof assembly, the roof assembly shall,
    - (i) be of *noncombustible construction*, or
    - (ii) be constructed of *fire-retardant treated wood* conforming to Article 3.1.4.5.,
  - (d) *mezzanines* shall have a *fire-resistance rating* not less than 1 h,
  - (e) the *fire separation* of *exits* described in Sentence 3.4.4.1.(3) shall be of *noncombustible construction*, and
  - (f) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.
- (3) The construction of non-contiguous roof assemblies at different elevations is permitted to be evaluated separately to determine which roof assemblies are required to be constructed in accordance with Clause (2)(c).
- (4) Group A, Division 2 *major occupancies*, Group E *major occupancies* and *storage garages* located in a *building* within the scope of this Article are permitted to be constructed in accordance with this Article provided they are located below the third *storey* of the *building*. (See Appendix A.)

**r5 3.2.2.51. Group D, up to 6 Storeys, Sprinklered, Noncombustible Construction**

- (1) A *building* classified as Group D is permitted to conform to Sentence (2) provided,
  - (a) except as permitted by Sentence 3.2.2.7.(1), the *building* is *sprinklered*,
  - (b) it is not more than 6 *storeys* in *building height*, and
  - (c) it has a *building area*,
    - (i) that is not limited if the *building* is not more than 2 *storeys* in *building height*,
    - (ii) not more than 14 400 m<sup>2</sup> if 3 *storeys* in *building height*,
    - (iii) not more than 10 800 m<sup>2</sup> if 4 *storeys* in *building height*,
    - (iv) not more than 8 640 m<sup>2</sup> if 5 *storeys* in *building height*, or
    - (v) not more than 7 200 m<sup>2</sup> if 6 *storeys* in *building height*.
- (2) Except as permitted by Article 3.2.2.16., the *building* referred to in Sentence (1) shall be of *noncombustible construction*, and,
  - (a) floor assemblies shall be *fire separations* with a *fire-resistance rating* not less than 1 h,
  - (b) *mezzanines* shall have a *fire-resistance rating* not less than 1 h, and
  - (c) *loadbearing* walls, columns and arches shall have a *fire-resistance rating* not less than that required for the supported assembly.

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(5) For *buildings of combustible construction*, materials installed to provide the required protection of soffits may be covered with a *combustible* or *noncombustible* finish material.

### 3.2.3.7. Construction of Exposing Building Face

- r<sub>5</sub>** (1) Except as provided by Sentences (3) to (6) and Articles 3.2.3.10. and 3.2.3.11, the *fire-resistance rating*, construction and cladding for *exposing building faces* of *buildings* or *fire compartments* shall comply with Table 3.2.3.7.
- (2) Reserved
- r<sub>5</sub>** (3) Except as provided by Sentences (4) to (6), cladding for *buildings* or *fire compartments* where the maximum permitted area of *unprotected openings* is more than 10% of the *exposing building face* need not be *noncombustible* where the wall assembly complies with the requirements of Sentences 3.1.5.5.(1), (3) and (4) when tested in conformance with CAN/ULC-S134, “Fire Test of Exterior Wall Assemblies”.
- r<sub>5</sub>** (4) Except as provided by Sentence (6), cladding for *buildings* or *fire compartments* where the maximum permitted area of *unprotected openings* is more than 10% but not more than 25% of the *exposing building face* need not be *noncombustible* where the wall assembly complies with Article 3.1.5.5.
- r<sub>5</sub>** (5) Except as provided by Sentence (6), cladding for *buildings* or *fire compartments* where the maximum permitted area of *unprotected openings* is more than 25% but not more than 50% of the *exposing building face* need not be *noncombustible* where,
- (a) the *limiting distance* is greater than 5 m,
  - (b) the *building* or *fire compartment* and all *combustible attic or roof spaces* are *sprinklered*,
  - (c) the cladding,
    - (i) conforms to Subsection 9.27.6., 9.27.7., 9.27.8., 9.27.9. or 9.27.10.,
    - (ii) is installed without furring members, or on furring not more than 25 mm thick, over gypsum sheathing at least 12.7 mm thick or over masonry, and
    - (iii) after conditioning in conformance with ASTM D2898, “Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing”, has a *flame-spread rating* not greater than 25 on the exterior face when tested in accordance with Sentence 3.1.12.1.(1),
  - (d) the cladding,
    - (i) conforms to Subsection 9.27.12.,
    - (ii) is installed with or without furring members over gypsum sheathing at least 12.7 mm thick or over masonry,
    - (iii) has a *flame-spread rating* not greater than 25 when tested in accordance with Sentence 3.1.12.1.(2), and
    - (iv) does not exceed 2 mm in thickness exclusive of fasteners, joints and local reinforcements, or
  - (e) the wall assembly complies with Article 3.1.5.5.
- r<sub>5</sub>** (6) Subject to Sentence (7), cladding for *buildings* within the scope of Article 3.2.2.43A. or 3.2.2.50A. that exceed 4 *storeys* in *building height* or for *fire compartments* in such *buildings* where the maximum permitted area of *unprotected openings* is more than 10% of the *exposing building face* need not be *noncombustible* where the wall assembly complies with the requirements of Sentences 3.1.5.5.(3) and (4) when tested in accordance with CAN/ULC-S134, “Fire Test of Exterior Wall Assemblies”.
- r<sub>5</sub>** (7) A wall assembly described in Sentence (6) that includes *combustible* cladding of *fire-retardant treated wood* shall be tested for fire exposure after the cladding has been conditioned in conformance with ASTM D2898, “Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing”.
- r<sub>5</sub>** (8) The construction requirements for the *exposing building face* that are listed in Table 3.2.3.7. shall be satisfied before the area of *unprotected openings* may be increased as permitted by Sentence 3.2.3.12.(1).

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Table 3.2.3.7.  
Minimum Construction Requirements for Exposing Building Faces  
Forming Part of Sentences 3.2.3.7.(1) and (8)

Occupancy Classification of Building or Fire Compartment	Maximum Area of Unprotected Openings Permitted, % of Exposing Building Face Area	Minimum Required Fire-Resistance Rating	Type of Construction Required	Type of Cladding Required
Group A, B, C, D, or Group F, Division 3	0 to 10	1 h	Noncombustible	Noncombustible
	> 10 to 25	1 h	Combustible or Noncombustible	Noncombustible
	> 25 to 50	45 min	Combustible or Noncombustible	Noncombustible
	> 50 to < 100	45 min	Combustible or Noncombustible	Combustible or Noncombustible <sup>(1)</sup>
Group E, or Group F, Division 1 or 2	0 to 10	2 h	Noncombustible	Noncombustible
	> 10 to 25	2 h	Combustible or Noncombustible	Noncombustible
	> 25 to 50	1 h	Combustible or Noncombustible	Noncombustible
	> 50 to < 100	1 h	Combustible or Noncombustible	Combustible or Noncombustible <sup>(1)</sup>
Column 1	2	3	4	5

## Notes to Table 3.2.3.7.:

(1) Cladding for buildings over 4 storeys in building height within the scope of Article 3.2.2.43A. or 3.2.2.50A. or for fire compartments in such buildings is required to be noncombustible.

### 3.2.3.8. Protection of Exterior Building Face

(1) Except as permitted by Sentence (3) and in addition to the requirements of Sentence 3.2.3.7.(1) and where the maximum permitted area of *unprotected openings* is greater than 10% of the *exposing building face*, foamed plastic insulation used in an exterior wall of a building more than 3 storeys in building height shall be protected on its exterior surface by,

- (a) concrete or masonry not less than 25 mm thick, or
- (b) noncombustible material that complies with the criteria for testing and conditions of acceptance of Sentence (2) when tested in conformance with CAN/ULC-S101, "Fire Endurance Tests of Building Construction and Materials".

(2) The criteria for testing and the conditions of acceptance for a wall assembly to satisfy the requirements of Clause (1)(b) are that,

- (a) the fire exposed area of the wall assembly shall be not less than 9.3 m<sup>2</sup> and have no dimension less than 2.75 m,
- (b) the exposed surface will include typical vertical and horizontal joints,
- (c) the test shall be continued for not less than 15 min and the standard time/temperature curve of the referenced standard shall be followed,
- (d) the noncombustible protective material will remain in place and no through openings will develop that are visible when viewed normal to the face of the material, and
- (e) the noncombustible protective material will not disintegrate in a manner that would permit fire to propagate along the surface of the test assembly.

(3) The requirements of Sentence (1) are waived for wall assemblies that comply with the requirements of Article 3.1.5.5.



### 3.2.3.9. Protection of Structural Members

- (1) Structural members, including beams, columns and arches, placed wholly or partly outside an exterior face of a *building* that are less than 3 m from the property line or centreline of a public thoroughfare shall be protected from exterior fire by fire protection having a *fire-resistance rating* not less than that required by Articles 3.2.2.20. to 3.2.2.83. for their protection from interior fires, but not less than 1 h.
- (2) Structural members of *heavy timber construction*, including beams, columns and arches, placed wholly or partly outside an exterior face of a *building* and 3 m or more from the property line or centreline of a public thoroughfare need not be covered with *noncombustible* cladding.

### 3.2.3.10. Unlimited Unprotected Openings

- (1) An *exposing building face* of an *open-air storey* in a *storage garage* is permitted to have unlimited *unprotected openings* provided it has a *limiting distance* not less than 3 m.
- (2) The *exposing building face* of a *storey* that faces a *street* and is at the same level as the *street* is permitted to have unlimited *unprotected openings* if the *limiting distance* is not less than 9 m.

### 3.2.3.11. Low Fire Load, 1 Storey Building

- (1) An *exposing building face* of a *building* of *low hazard industrial occupancy* conforming to Article 3.2.2.82. is permitted to be of *noncombustible construction* without a *fire-resistance rating* provided,
  - (a) it is not a *loadbearing wall*, and
  - (b) the *limiting distance* is not less than 3 m.

### 3.2.3.12. Area Increase for Unprotected Openings

- r5 (1) Except as required by Sentence 3.2.3.7.(8), the maximum area of *unprotected openings* in any *exposing building face* or *fire compartment* of a *building* that is not *sprinklered* is permitted to be doubled if the openings are glazed with,
- (a) glass block conforming to the requirements of Article 3.1.8.14., or
  - (b) wired glass assemblies conforming to MMAH Supplementary Standard SB-2, "Fire Performance Ratings".
- (See Appendix A.)

### 3.2.3.13. Protection of Exit Facilities

- (1) Except as required by Sentence (3) and as permitted by Sentence 3.4.4.3.(1), if the plane of an exterior wall of an *exit* enclosure forms an angle less than 135° with the plane of an exterior wall of the *building* it serves, and an opening in the exterior wall of the *exit* enclosure could be exposed to fire from an opening in the exterior wall of the *building*, the opening in either the exterior wall of the *exit* or the exterior wall of the *building* shall be protected in conformance with the requirements of Sentence (4) where the opening in the exterior wall of the *building* is within 3 m horizontally and,
  - (a) less than 10 m below an opening in the exterior wall of the *exit*, or
  - (b) less than 2 m above an opening in the exterior wall of the *exit*.
- (2) If an unenclosed exterior *exit* stair or ramp could be exposed to fire from an opening in the exterior wall of the *building* it serves, the opening in the exterior wall of the *building* shall be protected in conformance with the requirements of Sentence (4) where the opening in the exterior wall of the *building* is within 3 m horizontally and,
  - (a) less than 10 m below the *exit* stair or ramp, or
  - (b) less than 5 m above the *exit* stair or ramp.
- (3) Except as permitted by Sentence 3.4.4.3.(1), if an exterior *exit* door in one *fire compartment* is within 3 m horizontally of an opening in another *fire compartment* and the exterior walls of these *fire compartments* intersect at an exterior angle of less than 135°, the opening shall be protected in conformance with the requirements of Sentence (4).

- (4) The opening protection referred to in Sentences (1) to (3) shall consist of,
- (a) glass block conforming to the requirements of Article 3.1.8.14.,
  - (b) a wired glass assembly conforming to MMAH Supplementary Standard SB-2, “Fire Performance Ratings”, or
  - (c) a *closure* conforming to the requirements of Subsection 3.1.8. and Articles 3.2.3.1. and 3.2.3.14.

### 3.2.3.14. Wall Exposed to Another Wall (See Appendix A.)

(1) Except as required by Sentences (3) and 3.2.3.13.(1) or as permitted by Sentence 3.2.3.19.(4), if an *unprotected opening* in an exterior wall of a *fire compartment* is exposed to an *unprotected opening* in the exterior wall of another *fire compartment*, and the planes of the two walls are parallel or at an angle less than 135°, measured from the exterior of the *building*, the *unprotected openings* in the two *fire compartments* shall be separated by a distance not less than  $D_o$ ,

where,

$$D_o = 2D - [(\theta/90) \times D] \text{ but in no case less than 1 m, and}$$

$D$  = the greater required *limiting distance* for the *exposing building faces* of the two *fire compartments*, and

$\theta$  = the angle made by the intersecting planes of the *exposing building faces* of the two *fire compartments* (in the case where the exterior walls are parallel and face each other,  $\theta = 0^\circ$ ).

(2) The exterior wall of each *fire compartment* referred to in Sentence (1) within the distance,  $D_o$ , shall have a *fire-resistance rating* not less than that required for the interior vertical *fire separation* between the *fire compartment* and the remainder of the *building*.

(3) Sentence (1) does not apply to *unprotected openings* of *fire compartments* within a *building* that is *sprinklered*, but shall apply to,

- (a) *unprotected openings* of *fire compartments* on opposite sides of a *firewall*, and
- (b) exposure from *unprotected openings* of a *fire compartment* that is not protected by an automatic sprinkler system.

### 3.2.3.15. Wall Exposed to Adjoining Roof

(1) Except as permitted by Sentence 3.2.3.19.(4), if a wall in a *building* is exposed to a fire hazard from an adjoining roof of a separate *fire compartment* that is not *sprinklered* in the same *building*, and the exposed wall contains windows within 3 *storeys* vertically and 5 m horizontally of the roof, the roof shall contain no skylights within 5 m of the exposed wall.

### 3.2.3.16. Protection of Soffits

(1) Except as permitted by Sentences (2) to (4), where a common *attic or roof space* spans more than two *suites* of *residential occupancy* or more than two patients’ or residents’ sleeping rooms in a Group B, Division 2 or 3 *occupancy*, and the common *attic or roof space* projects beyond the exterior wall of the *building*, the portion of any soffit or other surface enclosing the projection that is less than 2.5 m vertically above a window or door and less than 1.2 m from either side of the window or door, shall have no openings and shall be protected by,

- (a) *noncombustible* material,
  - (i) not less than 0.38 mm thick, and
  - (ii) having a melting point not below 650°C,
- (b) not less than 12.7 mm thick gypsum soffit board or gypsum wallboard installed according to CSA A82.31-M, “Gypsum Board Application”,
- (c) not less than 11 mm thick plywood,
- (d) not less than 12.5 mm thick OSB or waferboard, or
- (e) not less than 11 mm thick lumber.

(2) Where an *attic or roof space*, including its adjoining eave overhangs, is separated by construction conforming to Article 3.1.11.7. into compartments such that the resulting spaces are not common to more than two *suites* of *residential*

*occupancy* or more than two patients' or residents' sleeping rooms in a Group B, Division 2 or 3 *occupancy*, the requirements in Sentence (1) do not apply.

- (3) If an eave overhang is completely separated from the remainder of the *attic or roof space* by *fire blocks*, the requirements of Sentence (1) do not apply.
- (4) The protection required by Sentence (1) for projections is permitted to be omitted if,
  - (a) the *fire compartments* behind the window and door openings are *sprinklered* in accordance with Article 3.2.5.13., and
  - (b) all rooms, including closets and bathrooms, having openings in the wall beneath the soffit are *sprinklered*, notwithstanding exceptions permitted in the standards referenced in Article 3.2.5.13. for the installation of automatic sprinkler systems.

### **3.2.3.17. Canopy Protection for Vertically Separated Openings**

- (1) Except as permitted by Sentences (2) and (3), if a *storey* classified as a Group E or Group F, Division 1 or 2 *major occupancy* is required to be separated from the *storey* above by a *fire separation*,
  - (a) every opening in the exterior wall of the lower *storey* that is located vertically below an opening in the *storey* above shall be separated from the *storey* above by a *canopy* projecting not less than 1 m from the face of the *building* at the intervening floor level, and
  - (b) the *canopy* required by Clause (a) shall have a *fire-resistance rating* not less than that required for the floor assembly but need not be more than 1 h, except as required elsewhere in this Subsection.
- (2) Except as permitted by Sentence (3), the *canopy* required by Sentence (1) is permitted to be omitted if the exterior wall of the upper *storey* is recessed not less than 1 m behind the exterior wall containing the opening in the lower *storey*.
- (3) The requirements of Sentences (1) and (2) are permitted to be waived if sprinklers are installed in,
  - (a) the lower *storey* referred to in Clause (1)(a), and
  - (b) the *storey* immediately above the lower *storey*.

### **3.2.3.18. Covered Vehicular Passageway**

- (1) A covered vehicular passageway designed as a receiving or shipping area shall be separated from every *building* or part of a *building* adjoining it by a *fire separation* having a *fire-resistance rating* not less than 1.5 h.
- (2) A covered vehicular passageway constructed below *grade* shall be of *noncombustible construction*.

### **3.2.3.19. Walkway Between Buildings**

- (1) Except as required by Sentence 3.2.3.20.(2), if *buildings* are connected by a *walkway*, each *building* shall be separated from the *walkway* by a *fire separation* with a *fire-resistance rating* not less than 45 min.
- (2) Except as permitted by Sentence (3), a *walkway* connected to a *building* required to be of *noncombustible construction* shall also be of *noncombustible construction*.
- (3) A *walkway* connected to a *building* required to be of *noncombustible construction* is permitted to be of *heavy timber construction* provided,
  - (a) not less than 50% of the area of any enclosing perimeter walls is open to the outdoors, and
  - (b) the *walkway* is at ground level.
- (4) A *walkway* of *noncombustible construction* used only as a pedestrian thoroughfare need not conform to the requirements of Articles 3.2.3.14. and 3.2.3.15.
- (5) A *walkway* between *buildings* shall be not more than 9 m wide.

### 3.2.3.20. Underground Walkway

- (1) An underground *walkway* shall not be designed or used for any purpose other than pedestrian travel unless,
  - (a) the purpose is permitted, and
  - (b) sprinklers are installed in any space in the *walkway* containing an *occupancy*.
- (2) *Buildings* connected by an underground *walkway* shall be separated from the *walkway* by a *fire separation* with a *fire-resistance rating* not less than 1 h.
- (3) An underground *walkway* shall be of *noncombustible construction* suitable for an underground location.
- (4) In an underground *walkway*,
  - (a) smoke barrier doors shall be installed at intervals of not more than 100 m, or
  - (b) the travel distance from the door of an adjacent room or space to the nearest *exit* shall be not more than one and a half times the least allowable travel distance to an *exit* for any of the adjacent *occupancies* as permitted by Sentence 3.4.2.5.(1).
- (5) An underground *walkway* between *buildings* shall be not more than 9 m wide.

### r5 3.2.3.21. Service Lines Under Buildings

- (1) A *building* shall not be constructed over an existing buried flammable gas main unless the gas main is encased in a gas-tight conduit in conformance with CAN/CSA-Z662 / Z662.1, "Oil and Gas Pipeline Systems / Commentary on CAN/CSA-Z662-11, Oil and Gas Pipeline Systems".

## 3.2.4. Fire Alarm and Detection Systems (See Appendix A.)

### 3.2.4.1. Determination of Requirement for a Fire Alarm System

- (1) Reserved
- (2) Except as permitted by Sentences (3) to (5) and Sentence 3.2.4.2.(4), a fire alarm system shall be installed in a *building* that contains,
  - (a) a *contained use area*,
  - (b) an *impeded egress zone*,
  - (c) more than 3 *storeys*, including *storeys* below the *first storey*,
  - (d) a total *occupant load* more than 300, other than in open air seating areas,
  - (e) an *occupant load* more than 150 above or below the *first storey*, other than in open air seating areas,
  - (f) a school, college or child care facility, with an *occupant load* more than 40,
  - (g) a licensed beverage establishment or a restaurant, with an *occupant load* more than 150,
  - (h) a *medium hazard industrial occupancy* or a *low hazard industrial occupancy* with an *occupant load* more than 75 above or below the *first storey*,
  - (i) a *residential occupancy* with sleeping accommodation for more than 10 persons,
  - (j) a *high hazard industrial occupancy* with an *occupant load* more than 25,
  - (k) an *occupant load* more than 300 below an open air seating area,
  - (l) an *interconnected floor space* required to conform to Articles 3.2.8.3. to 3.2.8.11,
  - (m) a *care and treatment occupancy* for more than 10 persons receiving care or treatment, or
  - (n) a *care occupancy* for more than 10 persons receiving care.
- (3) If each *dwelling unit* has direct access to an exterior *exit* facility leading to ground level, a fire alarm system is not required in an apartment *building*,
  - (a) in which not more than four *dwelling units* share a common *means of egress*, or
  - (b) that is not more than 3 *storeys* in *building height*.

- (d) the voice communication system referred to in Article 3.2.4.23. has a provision to override the automatic signal to allow the transmission of voice messages through silenced audible signal device circuits that serve the *dwelling units*.

(See Appendix A.)

(14) If a two stage fire alarm system has been installed with an automatic signal silence as described in Sentence (13), the system shall be designed so that any silenced audible signal devices serving *dwelling units* are reactivated whenever an *alarm signal* is required to be transmitted as part of the second stage.

### 3.2.4.21. Visual Signals

(1) Visual signal devices required by Sentences 3.2.4.19.(4) and 3.2.4.20.(7) and (8) shall be installed so that the signal from at least one device is visible throughout the *floor area* or portion of it in which they are installed. (See Appendix A.)

(2) Visual signal devices permitted by Sentence 3.2.4.19.(5) shall be installed so that the signal from at least one device is visible throughout the compartment in which they are installed. (See Appendix A.)

### 3.2.4.22. Smoke Alarms

- r<sub>1</sub> (1) Except as permitted by Sentence (6), *smoke alarms* conforming to CAN/ULC-S531, “Smoke Alarms”, shall be installed in each *dwelling unit* and, except for *care, care and treatment* or *detention occupancies* required to have a fire alarm system, in each sleeping room not within a *dwelling unit*.
- (2) At least one *smoke alarm* shall be installed on each *storey* and *mezzanine* of a *dwelling unit*.
- (3) On any *storey* of a *dwelling unit* containing sleeping rooms, a *smoke alarm* shall be installed in,
- each sleeping room, and
  - a location between the sleeping rooms and the remainder of the *storey*, and if the sleeping rooms are served by a hallway, the *smoke alarm* shall be located in the hallway.
- (4) A *smoke alarm* shall be installed on or near the ceiling.
- (5) Except as permitted by Sentence (6), *smoke alarms* required by Sentence (1) shall,
- be installed with permanent connections to an electrical circuit,
  - have no disconnect switch between the overcurrent device and the *smoke alarm*, and
  - in case the regular power supply to the *smoke alarm* is interrupted, be provided with a battery as an alternative power source that can continue to provide power to the *smoke alarm* for a period of not less than seven days in the normal condition, followed by 4 min of alarm.
- (See Appendix A.)
- (6) *Suites of residential occupancy* are permitted to be equipped with *smoke detectors* in lieu of *smoke alarms*, provided the *smoke detectors*,
- are capable of independently sounding audible signals within the individual *suites*,
  - except as provided by Sentence (7), are installed in conformance with CAN/ULC-S524, “Installation of Fire Alarm Systems”, and verified in conformance with CAN/ULC-S537, “Verification of Fire Alarm Systems”, and
  - form part of the fire alarm system.
- (7) *Smoke detectors* permitted to be installed in lieu of *smoke alarms* as provided in Sentence (6) are not required under Clause (6)(b) to sound an alarm throughout the rest of the *building*, provided they sound localized alarms within individual *suites* and otherwise meet the requirements of Clause (6)(b). (See Appendix A.)
- (8) If more than one *smoke alarm* is required in a *dwelling unit*, the *smoke alarms* shall be wired so that the actuation of one *smoke alarm* will cause all *smoke alarms* within the *dwelling unit* to sound.

(9) A *smoke alarm* required by Sentence (1) shall be installed in conformance with CAN/ULC-S553, “Installation of Smoke Alarms”.

(10) Except as permitted by Sentence (11), a manually operated silencing device shall be incorporated within the circuitry of a *smoke alarm* installed in a *dwelling unit* so that it will silence the signal emitted by the *smoke alarm* for a period of not more than 10 min, after which the *smoke alarm* will reset and again sound the alarm if the level of smoke in the vicinity is sufficient to reactuate the *smoke alarm*.

(11) *Suites of residential occupancy* equipped with *smoke detectors* installed in conformance with CAN/ULC-S524, “Installation of Fire Alarm Systems”, as part of the fire alarm system in lieu of *smoke alarms* as permitted by Sentence (6), need not incorporate the manually operated silencing device required by Sentence (10).

(12) The sound patterns of *smoke alarms* shall,  
 (a) meet the temporal patterns of *alarm signals*, or  
 (b) be a combination of temporal pattern and voice relay.

r<sub>5</sub> (13) *Smoke alarms* required by Sentence (1) shall have a visual signalling component conforming to the requirements in 18.5.3. (Light, Color and Pulse Characteristics) of NFPA 72, “National Fire Alarm and Signaling Code”. (See Appendix A.)

r<sub>5</sub> (14) The visual signalling component required by Sentence (13) need not,  
 (a) be integrated with the *smoke alarm* provided it is interconnected to it,  
 (b) be on battery backup, or  
 (c) have synchronized flash rates, when installed in a *dwelling unit*.

r<sub>5</sub> (15) The luminous intensity for visual signalling components required by Sentence (13) that are installed in sleeping rooms shall be a minimum of 175 cd.

### 3.2.4.23. Voice Communication Systems

(1) A voice communication system required by Sentences (7) to (10), Subsection 3.2.6. or Clause 3.3.2.4.(14)(f) shall consist of,

- (a) a two-way means of communication with,
  - (i) the central alarm and control facility, and
  - (ii) the mechanical control centre from each *floor area*, and
- (b) except as provided by Sentence (8), loudspeakers that are,
  - (i) operated from the central alarm and control facility, and
  - (ii) designed and located so that transmitted messages are audible and intelligible as required by Sentence (2) in all parts of the *building*, except in elevator cars.
 (See Appendix A.)

(2) The voice communication system referred to in Clause (1)(b) shall be capable of broadcasting pre-recorded, synthesized or live messages with voice intelligibility meeting or exceeding the equivalent of a common intelligibility scale score of 0.70. (See Appendix A.)

(3) The voice communication system referred to in Sentence (1) shall include a means to silence the *alarm signal* in a single stage fire alarm system while voice messages are being transmitted, but only after the *alarm signal* has initially sounded for not less than 30 s.

(4) The voice communication system referred to in Sentence (1) shall include a means to silence the *alert signal* and the *alarm signal* in a two stage fire alarm system while voice messages are being transmitted, but only after the *alert signal* has initially sounded for not less than,  
 (a) 10 s in hospitals that have supervisory personnel on duty for twenty-four hours each day, or  
 (b) 30 s for all other *occupancies*.

- (5) The voice communication system referred to in Clause (1)(b) shall be designed so that the *alarm signal* can be selectively transmitted to any zone or zones while maintaining an *alert signal* or selectively transmitting voice messages to any other zone or zones in the *building*.
- (6) The voice communication system referred to in Clause (1)(a) shall be installed so that emergency communication devices are located in each *floor area* near *exit* stair shafts.
- (7) Except for Group B, Division 1 and Group F, Division 1 *major occupancies*, a voice communication system shall be installed in a *building* where,
- a fire alarm system is required under Subsection 3.2.4.,
  - a two stage fire alarm system is installed, and
  - the *occupant load* of the *building* exceeds 1 000.
- (8) A voice communication system required by Sentence (7) shall consist of loudspeakers that are,
- operated from the central alarm and control facility or, in the absence of a central alarm and control facility, from a designated area, and
  - designed and located so that transmitted messages are audible and intelligible in all parts of the *building*, except in elevator cars.
- (9) Unless staff trained to provide instructions over the voice communication system referred to in Sentence (8) are present at all times, a pre-recorded message shall be provided.
- r<sub>3</sub> (10) The voice communication system required by Sentence (7) shall meet the silencing and transmission requirements of Sentences (3) to (5).

### 3.2.5. Provisions for Firefighting

#### 3.2.5.1. Access to Above Grade Storeys

- (1) Except for *storeys* below the *first storey*, direct access for firefighting shall be provided from the outdoors to every *storey* that is not *sprinklered* and whose floor level is less than 25 m above *grade*, by at least one unobstructed window or access panel for each 15 m of wall in each wall required to face a *street* by Subsection 3.2.2.
- (2) An opening for access required by Sentence (1) shall,
- have a sill no higher than 1 070 mm above the inside floor, and
  - be not less than 1 100 mm high by not less than,
    - 550 mm wide for a *building* not designed for the storage or use of *dangerous goods*, or
    - 750 mm wide for a *building* designed for the storage or use of *dangerous goods*.
- (3) Access panels above the *first storey* shall be readily openable from both inside and outside, or the opening shall be glazed with plain glass.

#### 3.2.5.2. Access to Basements

- (1) Direct access from at least one *street* shall be provided from the outdoors to each *basement*,
- that is not *sprinklered*, and
  - that has horizontal dimension more than 25 m.
- (2) The access required by Sentence (1) is permitted to be provided by,
- doors, windows or other means that provide an opening not less than 1 100 mm high and 550 mm wide, with a sill no higher than 900 mm above the inside floor, or
  - an interior stairway immediately accessible from the outdoors

### 3.2.5.3. Roof Access

- (1) On a *building* more than 3 storeys in *building height* where the slope of the roof is less than 1 in 4, all main roof areas shall be provided with direct access from the *floor areas* immediately below, either by,
  - (a) a stairway, or
  - (b) a hatch not less than 550 mm by 900 mm with a fixed ladder.
- (2) Clearance and access around roof signs or other obstructions shall provide,
  - (a) a passage not less than 900 mm wide by 1 800 mm high, clear of all obstructions except for necessary horizontal supports not more than 600 mm above the roof surface,
    - (i) around every roof sign, and
    - (ii) through every roof sign at locations not more than 15 m apart, and
  - (b) a clearance of not less than 1 200 mm between any portion of a roof sign and any opening in the exterior wall face or roof of the *building* in which it is erected.

### 3.2.5.4. Access Routes

- (1) A *building* that is more than 3 storeys in *building height* or more than 600 m<sup>2</sup> in *building area* shall be provided with access routes for fire department vehicles,
  - (a) to the *building* face having a principal entrance, and
  - (b) to each *building* face having access openings for firefighting as required by Articles 3.2.5.1. and 3.2.5.2.(See Appendix A.)

### 3.2.5.5. Location of Access Routes

- (1) Access routes required by Article 3.2.5.4. shall be located so that the principal entrance and every access opening required by Articles 3.2.5.1. and 3.2.5.2. are located not less than 3 m and not more than 15 m from the closest portion of the access route required for fire department use, measured horizontally from the face of the *building*.
- (2) Access routes shall be provided to a *building* so that,
  - (a) for a *building* provided with a fire department connection, a fire department pumper vehicle can be located adjacent to the hydrants referred to in Article 3.2.5.16.,
  - (b) for a *building* not provided with a fire department connection, a fire department pumper vehicle can be located so that the length of the access route from a hydrant to the vehicle plus the unobstructed path of travel for the firefighter from the vehicle to the *building* is not more than 90 m, and
  - (c) the unobstructed path of travel for the firefighter from the vehicle to the *building* is not more than 45 m.
- (3) The unobstructed path of travel for the firefighter required by Sentence (2) from the vehicle to the *building* shall be measured from the vehicle to the fire department connection provided for the *building*, except that if no fire department connection is provided, the path of travel shall be measured to the principal entrance of the *building*.
- (4) If a portion of a *building* is completely cut off from the remainder of the *building* so that there is no access to the remainder of the *building*, the access routes required by Sentence (2) shall be located so that the unobstructed path of travel from the vehicle to one entrance of each portion of the *building* is not more than 45 m.



### 3.2.5.6. Access Route Design

- (1) A portion of a roadway or yard provided as a required access route for fire department use shall,
  - (a) have a clear width not less than 6 m, unless it can be shown that lesser widths are satisfactory,
  - (b) have a centreline radius not less than 12 m,
  - (c) have an overhead clearance not less than 5 m,
  - (d) have a change of gradient not more than 1 in 12.5 over a minimum distance of 15 m,
  - (e) be designed to support the expected loads imposed by firefighting equipment and be surfaced with concrete, asphalt or other material designed to permit accessibility under all climatic conditions,
  - (f) have turnaround facilities for any dead-end portion of the access route more than 90 m long, and
  - (g) be connected with a public thoroughfare.
 (See Appendix A.)
- r<sub>5</sub> (2) A *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A. shall have no portion of the required access route more than 20 m below the floor level of the uppermost *storey* or *mezzanine* that is not a rooftop enclosure, provided for elevator machinery, a stairway or a *service room* used for no purpose other than for service to the *building*.

### 3.2.5.7. Water Supply (See Appendix A.)

- (1) An adequate water supply for firefighting shall be provided for every *building*.
- (2) Hydrants shall be located within 90 m horizontally of any portion of a *building* perimeter that is required to face a *street* in Subsection 3.2.2.

### 3.2.5.8. Reserved

### 3.2.5.9. Reserved

### 3.2.5.10. Reserved

### 3.2.5.11. Reserved

### 3.2.5.12. Reserved

### 3.2.5.13. Automatic Sprinkler Systems

- r<sub>1</sub> (1) Except as provided by Sentences (2) to (4), an automatic sprinkler system shall be designed, constructed, installed and tested in conformance with NFPA 13, “Installation of Sprinkler Systems”. (See Appendix A.)
- (2) NFPA 13R, “Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height”, is permitted to be used for the design, construction, installation and testing of an automatic sprinkler system installed in a *building*,
  - (a) of *residential occupancy* that is not more than 4 *storeys* in *building height*, or
  - (b) of Group B, Division 3 *occupancy* that contains sleeping accommodation for not more than 10 persons and not more than six occupants require assistance in evacuation in case of an emergency.
- r<sub>5</sub> (3) Except as required by Sentence (9), NFPA 13D, “Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes”, is permitted to be used for the design, construction, installation and testing of an automatic sprinkler system installed in a *building* of *residential occupancy* that contains not more than two *dwelling units*.
- (4) If a *building* contains fewer than nine sprinklers, the water supply for these sprinklers is permitted to be supplied from the domestic water system for the *building* provided the required flow for the sprinklers can be met by the domestic system.

- (5) If a water supply serves both an automatic sprinkler system and a system serving other equipment, control valves shall be provided so that either system can be shut off independently.
- r<sub>5</sub>** (6) Despite the requirements of the standards referenced in Sentences (1) and (2) for the installation of automatic sprinkler systems, sprinklers shall not be omitted in any room or closet in the *storey* immediately below a roof assembly if the *fire-resistance rating* of the roof assembly is waived as permitted by Article 3.2.2.17. (See Appendix A.)
- r<sub>5</sub>** (7) Despite the requirements of the standards referenced in Sentences (1) and (2) for the installation of automatic sprinkler systems, sprinklers shall be provided for all balconies and decks forming part of a *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A., other than,
- balconies or decks that are not more than 610 mm in depth measured perpendicular to the exterior wall of the *building*, or of *residential occupancy* that is not more than 4 *storeys* in *building height*, or
  - decks on the uppermost roof of the *building*.
- (See Appendix A.)
- r<sub>5</sub>** (8) Sprinklers in elevator machine rooms shall have a temperature rating not less than that required for an intermediate temperature classification and shall be protected against physical damage. (See Appendix A.)
- r<sub>5</sub>** (9) The sprinkler system described in Sentence (3) shall be provided with a minimum 20 min water supply when installed in a retirement home regulated under the *Retirement Homes Act, 2010*.

### 3.2.5.14. Combustible Sprinkler Piping

- (1) *Combustible* sprinkler piping shall be used only for wet systems in *residential occupancies* and other light hazard *occupancies*. (See Appendix A.)
- (2) *Combustible* sprinkler piping shall meet the requirements of ULC/ORD-C199P, “Combustible Piping for Sprinkler Systems”.
- (3) Except as permitted by Sentence (5), *combustible* sprinkler piping shall be separated from the area served by the sprinkler system, and from any other *fire compartment*, by ceilings, walls, or soffits consisting of, as a minimum,
- lath and plaster,
  - gypsum board not less than 9.5 mm thick,
  - plywood not less than 13 mm thick, or
  - a suspended membrane ceiling with,
    - steel suspension grids, and
    - lay-in panels or tiles having a mass not less than 1.7 kg/m<sup>2</sup>.
- (4) Except as permitted by Sentence (5), *combustible* sprinkler piping may be located above a ceiling, provided that the distance between the edge of any ceiling opening that is not protected in conformance with Sentence (3) and the nearest sprinkler is not more than 300 mm.
- (5) The protection required by Sentences (3) and (4) is permitted to be waived where *combustible* sprinkler piping has been tested in conformance with ULC/ORD-C199P, “Combustible Piping for Sprinkler Systems”, and has been shown to meet the requirements in that document without additional protection.

### 3.2.5.15. Sprinklered Service Space

- (1) An automatic sprinkler system shall be installed in a *service space* referred to in Sentence 3.2.1.1.(9) if flooring for access within the *service space* is other than catwalks.
- (2) The sprinkler system required by Sentence (1) shall be equipped with waterflow detecting devices, with each device serving not more than 1 *storey*.

- (3) The waterflow detecting devices required by Sentence (2) shall be connected to the fire alarm system to,
  - (a) initiate an *alert signal* in a two stage system or an *alarm signal* in a single stage system, and
  - (b) indicate separately on the fire alarm system annunciator the actuation of each device.
  
- (4) If a *building* is *sprinklered*, sprinkler protection need not be provided in the space below a raised floor in a *computer room*,
  - (a) if the optical fibre cables and electrical wires and cables in this space conform to the test requirements in Article 3.1.5.21.,
  - (b) if the *building* is of *noncombustible construction* and other *combustible* components are limited to those permitted in Subsection 3.1.5.,
  - (c) if this space is used to circulate conditioned air and the air handling system is designed to prevent the circulation of smoke upon a signal from a *smoke detector*,
  - (d) if all of this space is easily accessible by providing access sections or panels in the raised floor, and
  - (e) if the *computer room* is more than 2 000 m<sup>2</sup> and the annunciator has separate zone indicators of the actuation of *smoke detectors* located in this space so that the coverage for each zone is not more than 2 000 m<sup>2</sup>.
  
- (5) Where a room, chute or bin is required to be *sprinklered* as indicated in Sentence 3.3.4.3.(1), Article 3.6.2.5. and Sentence 3.6.3.3.(6), the sprinklers may be supplied with water from the fire standpipe system provided that,
  - (a) except for a chute, not more than eight sprinklers are required to protect any room or bin based on a maximum coverage of 12 m<sup>2</sup> per sprinkler,
  - (b) the standpipe riser is,
    - (i) not less than 6 in. in diameter, or
    - (ii) hydraulically designed to meet combined water supply as specified in Clause (c),
  - (c) the water supply for a standpipe system, pumping capability and water storage facility, if required, is increased to supply 95 L/min for each sprinkler over and above the requirements for the standpipe system up to maximum 760 L/min for sprinklers,
  - (d) a waterflow detecting device shall be installed in the sprinkler main adjacent to the point of connection to the standpipe riser, and
  - (e) the activation of each waterflow detecting device in Clause (d) shall be indicated separately on the fire alarm system annunciator.

### 3.2.5.16. Fire Department Connections

- (1) The fire department connection for a standpipe system shall be located so that the distance from the fire department connection to a hydrant is not more than 45 m and is unobstructed.

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### 3.2.6.5. Elevator for Use by Firefighters

- (1) At least one elevator shall be provided for use by firefighters in conformance with Sentences (2) to (6).
- (2) The elevator referred to in Sentence (1) shall have a useable platform area not less than 2.2 m<sup>2</sup> and shall be capable of carrying a load of 900 kg to the top floor that it serves from a landing on the *storey* containing the entrance for firefighter access referred to in Articles 3.2.5.4. and 3.2.5.5. within 1 min.
- (3) Except where Measure K of MMAH Supplementary Standard SB-4, “Measures for Fire Safety in High Buildings”, is used, each elevator for use by firefighters shall,
- F<sub>5</sub> (a) be provided with a *closure* at each shaft opening so that the interlock mechanism remains mechanically engaged and electrical continuity is maintained in the interlock circuits and associated wiring for a period of not less than 1 h when the assembly is subjected to the standard fire exposure described in CAN/ULC-S104, “Fire Tests of Door Assemblies”,
- (b) be protected with a vestibule containing no *occupancy* and separated from the remainder of the *floor area* by a *fire separation* having a *fire-resistance rating* not less than 45 min, or
- (c) be protected with a corridor containing no *occupancy* and separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* not less than 1 h.
- (4) Except as permitted in Sentence (5), an elevator referred to in Sentence (1) shall be capable of providing transportation from the *storey* containing the entrance for firefighter access referred to in Articles 3.2.5.4. and 3.2.5.5. to every floor that is above *grade* in the *building* and that is normally served by the elevator system.
- (5) If it is necessary to change elevators to reach any floor referred to in Sentence (4), the system shall be designed so that not more than one change of elevator is required when travelling to any floor in the *building* from the *storey* containing the entrance for firefighter access referred to in Articles 3.2.5.4. and 3.2.5.5.
- (6) Electrical conductors for the operation of the elevator referred to in Sentence (1) shall be,
- (a) installed in *service spaces* conforming to Section 3.6. that do not contain other *combustible* material, or
- (b) protected against exposure to fire from the service entrance of the emergency power supply, or the normal service entrance of the normal power supply, to the equipment served, to ensure operation for a period of 1 h when subjected to the standard fire exposure described in CAN/ULC-S101, “Fire Endurance Tests of Building Construction and Materials”.

### 3.2.6.6. Venting to Aid Firefighting

- (1) Means of venting each *floor area* to the outdoors shall be provided by windows, wall panels, smoke shafts or, except as provided by Sentence (5), the *building* exhaust system.
- (2) Fixed glass windows shall not be used for the venting required by Sentence (1) if the breaking of the windows could endanger pedestrians below.
- (3) Openable windows used for the venting required by Sentence (1) shall be permanently marked so that they are easily identifiable.
- (4) Elevator hoistways shall not be designed for the venting required by Sentence (1).
- (5) In a *building* that is not *sprinklered*, venting of *floor areas* required in Sentence (1) shall not be provided by the *building* exhaust system.

### 3.2.6.7. Central Alarm and Control Facility

- (1) A central alarm and control facility shall be provided on the *storey* containing the entrance for firefighter access referred to in Articles 3.2.5.4. and 3.2.5.5. in a location that,

- (a) is readily accessible to firefighters entering the *building*, and
  - (b) takes into account the effect of background noise likely to occur under fire emergency conditions, so that the facility can properly perform its required function under such conditions.
- (2) The central alarm and control facility required in Sentence (1) shall include,
- (a) means to control the voice communication system required by Article 3.2.6.8., so that messages can be sent to,
    - (i) all loudspeakers simultaneously,
    - (ii) individual *floor areas*, and
    - (iii) *exit* stairwells,
  - (b) means to indicate audibly and visually *alert signals* and *alarm signals* and a switch to,
    - (i) silence the audible portion of these signals, and
    - (ii) indicate visually that the audible portion has been silenced,
  - (c) means to indicate visually that elevators are on emergency recall,
  - (d) an annunciator conforming to Article 3.2.4.9.,
  - (e) means to transmit *alert signals* and *alarm signals* to the fire department in conformance with Article 3.2.4.8.,
  - (f) means to release hold-open devices on doors to vestibules,
  - (g) means to manually actuate *alarm signals* in the *building* selectively to any zone or zones,
  - (h) means to silence the *alarm signals* referred to in Clause (g) in conformance with Sentences 3.2.4.23.(3) and (4),
  - (i) means, as appropriate to the measure for fire safety provided in the *building*, to,
    - (i) actuate auxiliary equipment, or
    - (ii) communicate with a continually staffed auxiliary equipment control centre,
  - (j) means for two-way communications with every elevator car,
  - (k) means to indicate visually, individual sprinkler system waterflow signals,
  - (l) means to indicate audibly and visually, sprinkler and standpipe system supervisory signals and trouble signals,
  - (m) a switch to silence the audible portion of a supervisory signal or a trouble signal, and
  - (n) visual indication that the audible portion of a supervisory signal or a trouble signal has been silenced.

### 3.2.6.8. Voice Communication System

- r<sub>1</sub>**
- (1) A voice communication system conforming to Article 3.2.4.23. shall be provided in a *building* if,
    - (a) the floor of the top *storey* is more than 36 m above *grade*,
    - (b) a *floor area* or part of a *floor area* located above the third *storey* is designed or intended for use as a Group B, Division 2 or 3 *occupancy*, or
    - (c) a *floor area* or part of a *floor area* located more than 18 m above *grade* is designed or intended for use as a retirement home regulated under the *Retirement Homes Act, 2010* that is a Group C *occupancy*.

### 3.2.6.9. Testing

- (1) The systems for control of smoke movement and mechanical venting required by Articles 3.2.6.2. and 3.2.6.6. shall be tested to ensure satisfactory operation in accordance with the procedures described in MMAH Supplementary Standard SB-4, “Measures for Fire Safety in High Buildings”.

## 3.2.7. Lighting and Emergency Power Systems

### 3.2.7.1. Minimum Lighting Requirements

- (1) An *exit*, a *public corridor*, a corridor providing *access to exit* for the public, a corridor serving patients or residents in a Group B, Division 2 or 3 *occupancy*, a corridor serving classrooms, an electrical equipment room, a transformer vault and a hoistway pit shall be equipped to provide illumination to an average level not less than 50 lx at floor or tread level and at all points such as angles and intersections at changes of level where there are stairs or ramps.
- (2) The minimum value of the illumination required by Sentence (1) shall not be less than 10 lx.

- (3) Rooms and spaces used by the public shall be illuminated as described in Article 9.34.2.7.
- (4) Lighting outlets in a *building of residential occupancy* shall be provided in conformance with Subsection 9.34.2.
- (5) Elevator machine rooms shall be equipped to provide illumination to an average level of not less than 100 lx at floor level.
- (6) Every place of assembly intended for the viewing of motion pictures or the performing arts, shall be equipped to provide an average level of illumination at floor level in the aisles of not less than 2 lx during the viewing.
- (7) Every area where food is intended to be processed, prepared or manufactured and where equipment or utensils are intended to be cleaned shall be equipped to provide illumination to a level of not less than 500 lx measured at the floor level.
- (8) Every storage room, dressing room, sanitary facility, service area and corridor serving the areas in Sentence (7) shall be equipped to provide illumination to a level of not less than 300 lx measured at the floor level.

### **3.2.7.2. Recessed Lighting Fixtures**

- (1) A recessed lighting fixture shall not be located in an insulated ceiling unless the fixture is designed for this type of installation.

### **3.2.7.3. Emergency Lighting**

- (1) Emergency lighting shall be provided to an average level of illumination not less than 10 lx at floor or tread level in,
  - (a) *exits*,
  - (b) principal routes providing *access to exit* in an open *floor area* and in *service rooms*,
  - (c) corridors used by the public,
  - (d) corridors serving patients' or residents' sleeping rooms in a Group B, Division 2 or 3 *occupancy*,
  - (e) corridors serving classrooms,
  - (f) underground *walkways*,
  - (g) *public corridors*,
  - (h) *floor areas* or parts of them where the public may congregate in,
    - (i) Group A, Division 1 *occupancies*, or
    - (ii) Group A, Divisions 2 and 3 *occupancies* having an *occupant load* of 60 or more,
  - (i) *floor areas* or parts of them in day care centres where persons are cared for,
  - (j) food preparation areas in commercial kitchens,
  - (k) principal routes providing *access to exit* in a *floor area* that is not subdivided into rooms or *suites* of rooms served by corridors in a *business and personal services occupancy*, a *mercantile occupancy* or an *industrial occupancy*, and
  - (l) internal corridors or aisles serving as principal routes to *exits* in a *business and personal services occupancy*, a *mercantile occupancy* or an *industrial occupancy* that is subdivided into rooms or *suites* of rooms, and is not served by a *public corridor*.
- (2) Emergency lighting to provide an average level of illumination of not less than 10 lx at floor or catwalk level shall be included,
  - (a) in a *service space* referred to in Sentence 3.2.1.1.(9), and
  - (b) on a *shelf and rack storage system*, in locations described in Sentence 3.16.1.5.(2).
- (3) The minimum value of the illumination required by Sentences (1) and (2) shall not be less than 1 lx.
- (4) In addition to the requirements of Sentences (1) to (3), the installation of battery-operated emergency lighting in health care facilities shall conform to the appropriate requirements of CSA Z32, "Electrical Safety and Essential Electrical Systems in Health Care Facilities".

### 3.2.7.4. Emergency Power for Lighting

- (1) An emergency power supply shall be,
- (a) provided to maintain the emergency lighting required by this Subsection from a power source such as batteries or generators that will continue to supply power in the event that the regular power supply to the *building* is interrupted, and
- rs (b) so designed and installed that upon failure of the regular power it will assume the electrical load automatically for a period of,
- (i) 2 h for a *building* within the scope of Subsection 3.2.6.,
  - (ii) 1 h for a *building* of Group B *major occupancy* classification that is not within the scope of Subsection 3.2.6.,
  - (iii) 1 h for a *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A., and
  - (iv) 30 min for any other *building*.
- (See Appendix A.)
- (2) If self-contained emergency lighting units are used, they shall conform to CSA C22.2 No. 141, “Emergency Lighting Equipment”.

### 3.2.7.5. Emergency Power Supply Installation

- rs (1) Except as required by Articles 3.2.7.6. and 3.2.7.7., an emergency electrical power system shall be installed in conformance with CSA C282, “Emergency Electrical Power Supply for Buildings”.
- (2) Every emergency power supply shall be equipped with an emergency audible and visual trouble indication.

### 3.2.7.6. Emergency Power for Hospitals

- (1) Except as required by Article 3.2.7.7., an emergency electrical power system for emergency equipment required by this Part for health care facilities shall be installed in conformance with CSA Z32, “Electrical Safety and Essential Electrical Systems in Health Care Facilities”. (See Appendix A.)

### 3.2.7.7. Fuel Supply Shut-Off Valves and Exhaust Pipes

- (1) If a liquid or gas fuel-fired engine or turbine for an emergency electric power supply is dependent on a fuel supply from outside the *building*, the fuel supply shall be provided with a suitably-identified separate shut-off valve outside the *building*.
- (2) Where pipes for exhaust gases from emergency power systems penetrate required *fire separations*, they shall be enclosed in a separate *service space* having a *fire-resistance rating* equal to that of the penetrated floor assembly, but not less than 45 min.

### 3.2.7.8. Emergency Power for Fire Alarm Systems

- (1) Fire alarm systems, including those incorporating a voice communication system, shall be provided with an emergency power supply conforming to Sentences (2) to (4).
- (2) The emergency power supply required by Sentence (1) shall be supplied from,
- (a) a generator,
  - (b) batteries, or
  - (c) a combination of the items described in Clauses (a) and (b).
- (3) The emergency power supply required by Sentence (1) shall be capable of providing,
- (a) supervisory power for not less than 24 h, and
  - rs (b) immediately following, emergency power under full load for not less than,



- (i) 2 h for a *building* within the scope of Subsection 3.2.6.,
- (ii) 1 h for a *building* classified as Group B *major occupancy* that is not within the scope of Subsection 3.2.6.,
- (iii) 1 h for a *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A.,
- (iv) 5 min for a *building* not required to be equipped with an annunciator, and
- (v) 30 min for any other *building*.

(See Appendix A.)

(4) The emergency power supply required by Sentence (1) shall be designed so that, in the event of a failure of the normal power source, there is an immediate automatic transfer to emergency power with no loss of information.

### **3.2.7.9. Emergency Power for Building Services**

(1) An emergency power supply capable of operating under a full load for not less than 2 h shall be provided by an emergency generator for,

- (a) every elevator serving *storeys* above the *first storey* in a *building* that is more than 36 m high measured between *grade* and the floor level of the top *storey* and every elevator for firefighters in conformance with Sentence (2),
- (b) water supply for firefighting in conformance with Article 3.2.5.7., if the supply is dependent on electrical power supplied to the *building*, and the *building* is within the scope of Subsection 3.2.6.,
- (c) fans and other electrical equipment that are installed to maintain the air quality specified in Article 3.2.6.2., and
- (d) fans required for venting by Article 3.2.6.6.

(See Appendix A.)

(2) Except as permitted by Sentence (3), the emergency power supply for elevators required by Clause (1)(a) shall be capable of operating all elevators for firefighters plus one additional elevator simultaneously.

(3) Sentence (2) does not apply if the time to recall all elevators under emergency power supply is not more than 5 min, each from its most remote *storey* to,

- (a) the *storey* containing the entrance for firefighter access referred to in Articles 3.2.5.4 and 3.2.5.5., or
- (b) to a transfer lobby.

(4) Except as provided by Sentence (5), an emergency power supply capable of operating under a full load for not less than 30 min shall be provided by emergency generator for water supply for firefighting in conformance with Article 3.2.5.7., if the supply is dependent on electrical power supplied to the *building*, and the *building* is not within the scope of Subsection 3.2.6.

(5) Sentence (4) does not apply to the water supply for a standpipe system.

### **3.2.7.10. Protection of Electrical Conductors**

(1) Electrical conductors shall conform to Sentences (2) to (9) if they,

- (a) are within *buildings* identified in Article 3.2.6.1. and serve,
  - (i) fire alarm systems, or
  - (ii) emergency equipment within the scope of Articles 3.2.6.2. to 3.2.6.8.,
- (b) serve fire pumps required to be installed under Article 3.2.5.19.,
- (c) serve mechanical systems related to,
  - (i) compartments referred to in Clause 3.3.3.6.(1)(b),
  - (ii) *contained use areas* referred to in Clauses 3.3.3.7.(4)(a) and (b), or
  - (iii) provisions of Articles 3.2.8.4. to 3.2.8.6. and 3.2.8.9., or
- (d) serve emergency lighting described in Article 3.2.7.3.

(2) Except as required by Sentence (3) and except as permitted in this Article, electrical conductors referred to in Sentence (1) shall,

- (a) conform to ULC-S139, “Fire Test for Evaluation of Integrity of Electrical Cables”, including the hose stream application, to provide a circuit integrity rating of not less than 1 h, or
- (b) be located in a *service space* that is separated from the remainder of the *building* by a *fire separation* that has a *fire-resistance rating* of not less than 1 h.

- (3) Electrical conductors that are used in conjunction with systems referred to in Clause (1)(c) shall,
  - (a) conform to ULC-S139, “Fire Test for Evaluation of Integrity of Electrical Cables”, including the hose stream application, to provide a circuit integrity rating of not less than 2 h, or
  - (b) be located in a *service space* that is separated from the remainder of the *building* by a *fire separation* that has a *fire-resistance rating* of not less than 2 h.
- (4) The *service spaces* referred to in Clause (2)(b) or (3)(b) shall not contain any *combustible* materials other than the electrical conductors being protected.
- (5) Except as permitted by Sentences (7) and (9), the electrical conductors referred to in Sentence (1) are those that extend from the source of emergency power to,
  - (a) the equipment served, or
  - (b) the distribution equipment supplying power to the equipment served, if both are in the same room. (See Appendix A.)
- (6) If a fire alarm transponder or annunciator located in one *fire compartment* is connected to a central processing unit or another transponder or annunciator located in a different *fire compartment*, the electrical conductors connecting them shall be protected in accordance with Sentence (2).
- (7) Fire alarm system branch circuits within a *storey* that connect transponders and individual devices need not conform to Sentence (2). (See Appendix A.)
- (8) Except as permitted by Sentence (9), if a distribution panel supplies power to emergency lighting, the power supply conductors leading up to the distribution panel shall be protected in accordance with Sentence (2).
- (9) Conductors leading from a distribution panel referred to in Sentence (8) to emergency lighting units in the same *storey* need not conform to Sentence (2).

## 3.2.8. Mezzanines and Openings Through Floor Assemblies

### 3.2.8.1. Application

- (1) Except as permitted by Article 3.2.8.2. and Sentence 3.3.4.2.(3), the portions of a *floor area* or a *mezzanine* that do not terminate at an exterior wall, a *firewall* or a vertical shaft shall,
  - (a) terminate at a vertical *fire separation* having a *fire-resistance rating* not less than that required for the floor assembly and extending from the floor assembly to the underside of the floor or roof assembly above, or
  - (b) be protected in conformance with the requirements of Articles 3.2.8.3. to 3.2.8.11.
- (2) The penetration of a floor assembly by an *exit* or a *vertical service space* shall conform to the requirements of Sections 3.4. to 3.6.
- (3) A *floor area* containing sleeping rooms in a *building* of Group B, Division 2 or 3 *major occupancy* shall not be constructed as part of an *interconnected floor space*.
- (4) Except as permitted in Sentence (5), an elementary or secondary school shall not,
  - (a) contain an *interconnected floor space*, or
  - (b) be located in an *interconnected floor space*.
- (5) An *interconnected floor space* is permitted in an elementary or secondary school provided,
  - (a) the *interconnected floor space* consists of the *first storey*, and the *storey* next above or below it, but not both,
  - (b) the *interconnected floor space* is *sprinklered*,
  - (c) the portions of the upper *floor area* that do not terminate at an exterior wall, a *firewall* or a vertical shaft shall terminate at a vertical *fire separation* extending from the floor assembly to the underside of the floor or roof assembly above,

### 3.2.8.6. Group B Sleeping Rooms

- (1) Openings provided for access between an *interconnected floor space* and a *building* or a portion of a *building* containing Group B *major occupancy* sleeping rooms shall be provided with vestibules that are provided with a mechanical air supply and that are designed,
- (a) to restrict the passage of smoke from the *interconnected floor space* into the area containing sleeping rooms in accordance with the limits described in Sentence 3.2.8.4.(1), and
  - (b) in conformance with Clause 3.2.8.4.(3)(a).

### 3.2.8.7. Sprinklers

- (1) In a *building* containing an *interconnected floor space*, *storeys* that are wholly or partially within an *interconnected floor space* and all *storeys* below an *interconnected floor space* shall be *sprinklered*.
- (2) In a *building* containing an *interconnected floor space*,
- (a) waterflow alarm signals from sprinkler systems shall be transmitted to the fire department in conformance with Sentence 3.2.4.8.(4), and
  - (b) sprinkler systems shall be electrically supervised as required by Sentence 3.2.4.10.(3).

### 3.2.8.8. Fire Alarm and Detection System

- (1) A *building* containing an *interconnected floor space* shall be provided with,
- (a) a fire alarm system and electrically supervised annunciator conforming to Subsection 3.2.4.,
  - (b) a system of *smoke detectors* located,
    - (i) on the ceiling of each *storey* in the vicinity of the openings through floor assemblies described in Article 3.2.8.3., except within *dwelling units*, *heat detectors* may be installed instead of *smoke detectors*, and
    - (ii) as required for the activation of the smoke control system described in Sentences 3.2.8.9.(3), (4), (6) and (7), and
 (See Appendix A.)
  - (c) facilities for transmitting a signal to the fire department in conformance with Article 3.2.4.8.

### 3.2.8.9. Smoke Control

- (1) A smoke control system conforming to Sentences (2) to (8) shall be designed to control the movement of smoke within a *building* containing an *interconnected floor space*.
- (2) The design of the smoke control system shall assume an outdoor temperature equal to the January design temperature on a 2.5% basis.
- (3) Upon activation of the sprinkler system or automatic detection of smoke by at least two *smoke detectors* in a single zone within an *interconnected floor space*, the system shall,
- (a) stop air moving fans that provide for the normal exhausting or re-circulating of air in an *interconnected floor space*,
  - (b) activate *exit* stairshaft protection required in Article 3.2.8.4.,
  - (c) activate elevator protection required in Article 3.2.8.5., and
  - (d) activate the vestibule air supply required in Sentence 3.2.8.6.(1).
- (4) A *building* containing an *interconnected floor space* may be designed so that, in the event of a fire arising in a *floor area* or part of a *floor area* within the *interconnected floor space*, automatic detection of such fire will activate air handling equipment that,
- (a) extracts air directly from such *floor area* or part of a *floor area* at the rate of at least six air changes per hour, and
  - (b) supplies air in sufficient quantities and at appropriate locations to prevent smoke from passing out of such *floor area* into other portions of the *interconnected floor space*.

(5) For purposes of Sentences (6) and (7), the volume of an *interconnected floor space* need not include the aggregate volume of those *floor areas* or portions of *floor areas* designed to have zoned air extraction in accordance with Sentence (4).

(6) A mechanical exhaust shall be provided to remove air at the top of an *interconnected floor space* at the rate of at least six air changes per hour, except that where the volume of the *interconnected floor space* exceeds 17 000 m<sup>3</sup>, only four air changes per hour need be provided.

(7) Except where zoned mechanical exhaust described in Sentence (4) has been activated, upon automatic detection of smoke within the volume of the *interconnected floor space*, the mechanical exhaust described in Sentence (6) shall be automatically activated and supply air shall be provided in sufficient quantity and at appropriate locations to allow a consistent rate of removal of smoke throughout the volume of the *interconnected floor space*.

(8) Overriding manual controls for the smoke control system shall be provided for fire department use at an acceptable location in the vicinity of the fire alarm annunciator.

### 3.2.8.10. Emergency Power Supply

(1) In a *building* that is more than 18 m in height, measured between *grade* and the floor level of the top *storey*, an emergency power supply capable of operating under a full load for at least 2 h shall be provided by an emergency generator or by a separate service not supplied by the same substation as the primary source for fans required for smoke control purposes in Articles 3.2.8.4., 3.2.8.5., 3.2.8.6. and 3.2.8.9.

### 3.2.8.11. Testing

(1) The systems for smoke control and venting described in Articles 3.2.8.4., 3.2.8.5., 3.2.8.6. and 3.2.8.9. shall be tested to ensure satisfactory operation.

## 3.2.9. Standpipe Systems

### 3.2.9.1. Where Required

(1) Except as provided in Sentences (4) to (7), a standpipe system shall be installed in every *building* that,

- is more than 3 *storeys* in *building height*,
- is more than 14 m high measured between *grade* and the ceiling of the top *storey*, or
- is not more than 14 m high measured between *grade* and the ceiling of the top *storey* but has a *building area* exceeding the area shown in Table 3.2.9.1. for the applicable *building height* if the *building* is not *sprinklered*.

(2) A standpipe system shall be installed in every *basement* of a *building* that requires a standpipe system above *grade*.

(3) A standpipe system shall be installed in every *basement* of a *building* that is regulated by Sentence 3.2.2.15.(2).

(4) A standpipe system is not required to be installed in the lowest *storey* in a *building* if this *storey* is a *service room* that has an area not more than 50 m<sup>2</sup>.

e<sub>3</sub> (5) A standpipe system is not required to be installed in a rooftop enclosure if this enclosure has an area not more than 50 m<sup>2</sup>.

(6) A standpipe system is not required to be installed in a *storage garage* conforming to Article 3.2.2.83. provided the *building* is not more than 15 m high.

- (7) A standpipe system is not required to be installed in a *dwelling unit* that,
  - (a) extends not more than 3 *storeys* above adjacent ground level,
  - (b) is completely cut off from the remainder of the *building* so that there is no access to the remainder of the *building*, and
  - (c) has direct access to its interior by means of an exterior doorway located not more than 1 500 mm above or below adjacent finished ground level.

Table 3.2.9.1.  
**Building Limits Without Standpipe Systems**  
 Forming Part of Sentence 3.2.9.1.(1)

Occupancy Classification	Building Area, m <sup>2</sup>		
	1 Storey	2 Storeys	3 Storeys
A	2 500	2 000	1 500
C	2 000	1 500	1 000
D	4 000	3 000	2 000
F, Division 2	2 000	1 500	1 000
F, Division 3	3 000	2 000	1 000
Column 1	2	3	4

### 3.2.9.2. Standpipe System Design

- (1) Except as otherwise provided in this Subsection, if a standpipe system is required, the design, construction, installation and testing of the system shall be in conformance with NFPA 14, “Installation of Standpipe and Hose Systems”.
- (2) A dry standpipe that is not connected to a water supply shall not be considered as fulfilling the requirements of this Article.
- (3) If more than one standpipe is provided, the total water supply need not be more than 30 L/s.
- (4) The residual water pressure at the design flow rate at the hydraulically most remote hose connection of a standpipe system that is required to be installed in a *building* is permitted to be less than 450 kPa provided that,
  - (a) the *building* is *sprinklered*,
  - (b) the water supply at the base of the sprinkler riser is capable of meeting the design flow rate and pressure demand of the sprinkler system, including the inside and outside hose allowance, and
  - (c) fire protection equipment is available to deliver, by means of the fire department connection, the full demand flow rate at a residual water pressure of 450 kPa at the hydraulically most remote hose connection of the standpipe system. (See Appendix A.)
- (5) A fire department connection shall be provided for every standpipe system.
- (6) Pumps required to have a rated net head pressure greater than 280 kPa and their controllers shall be *listed* and labelled.
- (7) Couplings for hoses or other fittings used in connection with such couplings shall conform to ULC-S513, “Threaded Couplings for 38 mm and 65 mm Fire Hose” or CAN/ULC-S543, “Internal Lug Quick Connect Couplings for Fire Hose”.

- (8) If freezing of piping may occur, a dry standpipe system may be provided and so arranged through the use of *listed* devices to,
- automatically admit water to the system by opening of a hose valve, and
  - transmit a signal to an attended location.
- (9) A standpipe riser shall be located in,
- an *exit* stair shaft, or
  - a *vertical service space* separated from the adjacent *floor area* by a *fire separation* having a *fire-resistance rating* conforming to Table 3.6.3.1.

### 3.2.9.3. Hose Connections

- (1) If a standpipe system is required in a *building*, 38 mm diam hose connections shall be provided in each *storey* in the *building*.
- (2) In addition to the requirements in Sentence (1), if a standpipe system is required, 65 mm diam hose connections shall be installed in each *storey* in the *building* if the *building*,
- is more than 25 m high, measured between *grade* and the ceiling of the top *storey*, or
  - has a *building area* of more than 4 000 m<sup>2</sup>.

### 3.2.9.4. Hose Stations

- (1) If a standpipe system is required in a *building*, hose stations shall be provided in each *storey* in the *building*.
- (2) Each hose station shall be equipped with a hose rack filled with not more than 30 m of 38 mm diam fire hose and the hose rack and fire hose shall be,
- listed*, or
  - approved by the Factory Mutual Research Corporation.
- (3) Except in a Group F *occupancy*, at each hose station, hose connections, valves, fire hose, nozzle and hose rack shall be in a hose cabinet.
- (4) A hose cabinet referred to in Sentence (3) shall be of sufficient size to,
- contain the equipment referred to in Sentence (3),
  - contain a *listed* fire extinguisher, and
  - provide sufficient clearance to permit the use of a standard fire department hose key.
- (5) Hose stations shall be located,
- so that every portion of the *building* can be reached by a hose stream and is within 3 m of a nozzle attached to the hose required in Sentence (2),
  - not more than 5 m from every required *exit* serving a *floor area*, except,
    - for the *first storey*, or
    - if additional hose stations are required to achieve full coverage of the *floor area*, and
  - in a conspicuous location where they are not likely to be obstructed.
- (6) Except as permitted in Sentence (7), hose stations shall be located so that it is not necessary to penetrate an *exit* with a hose in order to provide the design coverage required in Clause (5)(a).
- (7) A hose is permitted to penetrate an *exit* in order to provide the required coverage to,
- a *service room* referred to in Sentence 3.2.9.1.(4),
  - a rooftop enclosure referred to in Sentence 3.2.9.1.(5),
  - a room not more than 50 m<sup>2</sup> in area, or
  - a room or group of rooms not more than 200 m<sup>2</sup> in area in a *sprinklered floor area*.

- (a) attached or secured to the floor, platform or platform riser,
  - (b) provided with arms and back, and
  - (c) arranged in rows having an unobstructed passage not less than 400 mm wide measured horizontally between plumb lines from the backs of the seats in one row and the edges of the furthest forward projection of the seats in the next row in the unoccupied position.
- (2) For fixed seats with backs and with folding tablet arms, the value of 400 mm required by Clause (1)(c) shall be measured when the tablet arms are in the use position, but is permitted to be measured in the stored position provided,
- (a) there are not more than seven seats between any seat and the nearest aisle,
  - (b) the seats are located in a lecture hall or an auditorium used for instructional purposes, and
  - (c) the tablet arm, when raised manually to a vertical position, falls by the force of gravity to the stored position.
- (See Appendix A.)
- (3) Except as permitted by Sentences (4) and (5), aisles shall be located so that there are not more than seven seats with backs or 20 seats without backs between any seat and the nearest aisle.
- (4) The requirements of Sentence (3) do not apply if,
- (a) egress doorways are provided to serve both ends of rows of seats,
  - (b) each doorway referred to in Clause (a) serves not more than three rows of seats, and
  - (c) each row contains not more than 100 seats.
- (5) The requirements of Sentence (3) do not apply if,
- (a) there are not more than seven seats between any seat and the nearest aisle, where the seats are served by a single aisle,
  - (b) there are not more than 20 seats between any seat and the nearest aisle, where the seats are served by two aisles,
  - (c) each row has an unobstructed passage with minimum width of 400 mm plus 6.1 mm for each additional seat above 16 seats in the row, and
  - (d) the travel distance is not more than 45 m measured along the path of travel from any seat to an *exit* or to an egress doorway.
- (6) Seating arrangements that do not conform to the requirements of Sentences (3) to (5) are permitted provided the standard of safety is not reduced and the time required for egress is not increased.

### **3.3.2.4. Aisles**

- (1) Except as required by Articles, 3.3.2.9. and 3.3.2.10., aisles leading to egress doors or *exits* shall be provided in conformance with Sentences (2) to (27) in places of assembly that contain fixed seats.
- (2) In this Subsection, a converging aisle is an aisle into which the occupants of two or more aisles converge in travelling to an *exit*.
- (3) An aisle shall terminate at,
- (a) a converging aisle,
  - (b) an egress doorway from the seating area, or
  - (c) an *exit* from the seating area.
- (4) A converging aisle shall terminate at,
- (a) an egress doorway from the seating area, or
  - (b) an *exit* from the seating area.
- (5) The minimum clear width of aisles shall be not less than 1 100 mm , except that the width is permitted to be reduced to not less than,
- (a) 750 mm if serving not more than 60 seats, and
  - (b) 900 mm if serving seats on one side only.

- (6) The minimum clear width of each aisle shall be measured at the point in the aisle furthest from,
- an egress doorway referred to in Clause (15)(a),
  - an *exit* referred to in Clause (15)(b), or
  - an *exit* referred to in Sentence (16).
- (7) Except for an aisle serving bleacher seats, where rows of seats discharge into an aisle, the minimum clear width required by Sentence (5) shall be increased by 25 mm for each metre of length of the aisle measured in the direction towards an *exit*.
- (8) The width of a converging aisle shall be not less than the required width of the widest aisle plus 50% of the total required width of the remaining aisles that it serves.
- (9) If rows of seats discharge directly into the converging aisle, the width required by Sentence (8) shall be increased by 25 mm for each metre of length of the aisle where the rows of seats discharge into the aisle.
- (10) The width of an egress doorway or an *exit* leading directly from the seating area shall be not less than the required width of the widest aisle or converging aisle plus 50% of the total required width of the remaining aisles and converging aisles that it serves.
- (11) The requirements in Sentences (5) to (10) and (17) do not apply if,
- the minimum clear width of an aisle is in accordance with Article 3.3.1.16., but is not less than 900 mm if serving seats on one side only,
  - the minimum clear width of an aisle is in accordance with Article 3.3.1.16., but is not less than 1 200 mm if serving seats on both sides,
  - the minimum clear width of a converging aisle is in accordance with Article 3.3.1.16., but not less than the width of the widest aisle leading to the converging aisle,
  - the minimum clear width of an *exit* leading directly from the seating area is in accordance with Article 3.4.3.2.,
  - except as provided in Clause (f), the minimum clear width of an egress doorway leading directly from the seating area is in accordance with Article 3.3.1.16., but not less than the required width of the aisle or the converging aisle leading to the doorway, and
- R5** (f) if more than one vomitory is provided,
- the minimum total clear width of the egress doorways leading from one vomitory is not less than the required width of the aisle or the converging aisle leading to the doorways, and
  - the minimum clear width of egress doorways from additional vomitories is in accordance with Article 3.3.1.16.
- (12) Except as provided in Sentences (13) and (14), dead-end aisles shall be not more than 6 m long.
- (13) Dead-end aisles are permitted to be more than 6 m long, but not more than 10 m long if,
- the seating area is separated from other seating areas and adjacent *occupancies*, including a corridor serving any seating area, by a *fire separation* in accordance with Sentences 3.3.2.2.(1) and (2),
- R5** (b) the travel distance is not more than 25 m measured along the path of travel from any seat to an *exit*, to an egress doorway or to an opening into a vomitory,
- at least one *means of egress*, comprising not less than 30 per cent of the required *exit* capacity, is through an exterior *exit*, an *exit* stairway or a corridor not containing an *occupancy*,
  - each row served by the dead-end aisle has a minimum unobstructed width of 400 mm plus 6.1 mm for each additional seat above seven seats in a row, but not more than 550 mm,
  - the minimum ceiling height above the seating area is 3 m,
  - the activation of a *fire detector* or a sprinkler head in the seating area will,
    - cause the shutdown of the projection system serving the seating area, and
    - turn on the normal lighting in the seating area, and
  - the *floor area* is *sprinklered*.
- (14) Dead-end aisles are permitted to be more than 10 m long, but not more than 13 m long if,
- the seating area is separated from other seating areas and adjacent *occupancies*, including a corridor serving any seating area, by a *fire separation* in accordance with Sentences 3.3.2.2.(1) and (2),



- r<sub>5</sub>**
- (b) the travel distance is not more than 25 m measured along the path of travel from any seat to an *exit*, to an egress doorway or to an opening into a vomitory,
  - (c) at least one *means of egress*, comprising not less than 30 per cent of the required *exit* capacity, is through an exterior *exit*, an *exit* stairway or a corridor not containing an *occupancy*,
  - (d) each row served by a dead-end aisle has a minimum unobstructed width of 400 mm plus 6.1 mm for each additional seat above seven seats in a row, but not more than 550 mm,
  - (e) the activation of a *fire detector* or a sprinkler head in the seating area will,
    - (i) cause the shutdown of the projection system serving the seating area, and
    - (ii) turn on the normal lighting in the seating area,
  - (f) a voice communication system is installed in conformance with Article 3.2.4.23.,
  - (g) a smoke control system is installed to control movement of smoke in the seating area or a smoke exhaust system is provided so that, in the event of detection of smoke by a *smoke detector* in the seating area, air handling equipment is activated to extract air directly from the seating area at the rate of at least six air changes per hour, and
  - (h) the *floor area* is *sprinklered*.
- (15) Where a seating area is separated as required by Sentences 3.3.2.2.(1) and (2) or 3.3.2.2.(8), the length of travel by any aisle shall be not more than 45 m measured from the most remote point of the aisle to,
- (a) an egress doorway in the required separation, or
  - (b) an *exit* leading directly from the seating area.
- (16) Where a seating area is not required to be separated by Sentences 3.3.2.2.(1) and (2) or 3.3.2.2.(8), the travel distance shall be not more than 45 m measured from the most remote point of the aisle to an *exit*.
- (17) Side aisles shall be not less than 1 100 mm wide if seating is provided in conformance with Sentence 3.3.2.3.(4).
- (18) An aisle that has a slope not more than 1 in 8 shall not be stepped.
- (19) An aisle that slopes more than 1 in 8 shall be stepped.
- (20) The passageway between rows of seats served by a stepped aisle shall be level at right angles to the line of travel.
- (21) The riser of a step in an aisle shall be,
- (a) not less than 110 mm high, and
  - (b) not more than 200 mm high.
- (22) Variations are permitted in riser height provided,
- (a) the height of adjacent risers does not vary by more than 6 mm, and
  - (b) the depth of a tread or a platform in the direction of travel is not less than 430 mm.
- (23) Steps in an aisle shall,
- (a) have a run not less than 230 mm exclusive of nosings,
  - (b) have a tread depth not less than 250 mm,
  - (c) extend to the adjacent rows of seats in a manner that will not create a hazard from tripping, and
  - (d) have a finish on the treads conforming to Sentence 3.4.6.1.(1).
- (24) The location of every riser in an aisle shall be made apparent from both directions of travel by strategically placed lighting or contrasting marking stripes.
- (25) A platform in an aisle shall be level, except that a slope not more than 1 in 50 is permitted for a platform that is not less than 430 mm deep in the direction of *exit* travel.
- (26) If a step is used at the entry to a row of seats from a stepped aisle, an unobstructed platform not less than 800 mm square shall be provided adjacent to the aisle.
- (27) The finish of the surface of a platform in or adjacent to a stepped aisle shall conform to Sentence 3.4.6.1.(1).

### 3.3.2.5. Corridors

- (1) Except as permitted by Sentences (2) to (4), a corridor used by the public in an *assembly occupancy* as an *access to exit* shall be separated from the remainder of the *floor area* by a *fire separation* having a *fire-resistance rating* not less than 1 h.
- (2) The *fire-resistance rating* of the *fire separation* required by Sentence (1) is permitted to be less than 1 h but not less than 45 min provided the *fire-resistance rating* required by Subsection 3.2.2. is permitted to be less than 1 h for,
  - (a) the floor assembly above the *floor area*, or
  - (b) the floor assembly below the *floor area*, if there is no floor assembly above.
- (3) The *fire-resistance rating* required by Sentence (1) is permitted to be waived if the *floor area* in which the corridor is located is *sprinklered*.
- (4) The *fire separation* required by Sentence (1) is permitted to be waived if the distance from any point in the *floor area* to an *exit* measured along the path of travel to an *exit* does not exceed the travel distance permitted by Article 3.4.2.5.

### 3.3.2.6. Doors

- (1) A door equipped with a latching mechanism in an *access to exit* from a room or *suite of assembly occupancy* containing an *occupant load* more than 100 shall be equipped with a device that will release the latch and allow the door to swing wide open when a force not more than that specified in Sentence 3.8.3.3.(7) is applied to the device in the direction of travel to the *exit*.

### 3.3.2.7. Fixed Bench-Type Seats Without Arms

- (1) If fixed bench-type seats without arms are provided, the seat width per person shall be assumed to be 450 mm.
- (2) The centre-to-centre spacing between rows of bench-type seats shall be not less than 760 mm if back rests are provided, and not less than 550 mm if back rests are not provided.
- (3) A clear space of not less than 300 mm shall be provided between the back of each seat and the front of the seat immediately behind it.

### 3.3.2.8. Guards

- (1) Except as required by Sentences (2) to (4) for bleacher seats, *guards* shall be installed in outdoor and indoor places of assembly with fixed seats so that,
  - (a) at the fascia of every box, balcony or gallery where the seats extend to the edge, the height of *guards* is not less than,
    - (i) 760 mm in front of the seats, and
    - (ii) 920 mm if located at the end of aisles or at the foot of steps,
  - (b) the height of *guards* along every cross aisle other than those adjacent to the fascia of every box, balcony or gallery is not less than 660 mm, except that *guards* need not be provided if the backs of the seats along the front side of the aisle are not less than 600 mm above the floor of the aisle, and
  - (c) where the seating is arranged in successive tiers and the height of rise between platforms is more than 450 mm, the height of *guards* is not less than 660 mm along the entire row of seats at the edge of the platform.
- (2) The backs and ends of bleacher seats more than 1 200 mm above the ground or floor that are not adjacent to a wall shall be protected with a *guard*,
  - (a) not less than 1 070 mm high above an adjacent aisle surface or foot rest, and
  - (b) not less than 920 mm high above the centre of an adjacent seat board.

- (3) If the front of a bleacher is more than 600 mm above the ground or floor, it shall be protected with a *guard* not less than 840 mm high above the front foot rest.
- (4) Openings through any *guard* that is required by Sentences (2) and (3) shall be of a size that will prevent the passage of a sphere having a diameter more than 300 mm.

### 3.3.2.9. Outdoor Places of Assembly

- (1) A Group A, Division 4 *occupancy* and each tier or balcony that has a capacity of more than,
  - (a) 1 000 persons shall have no fewer than three separate *exits*, or
  - (b) 4 000 persons shall have no fewer than four separate *exits*.
- (2) In a Group A, Division 4 *occupancy*, every seat shall be located so that the travel distance is not more than 45 m measured along the path of travel from the seat to,
  - (a) the ground,
  - (b) an *exit*,
  - (c) an opening to a passageway leading from the seating area, or
  - (d) a portal, a vomitory or any other opening through the seating deck structure.
- (3) *Exits* from outdoor stadia or grandstands shall be located not more than 25 m apart.
- (4) The capacity of a *means of egress* for a Group A, Division 4 *occupancy* shall conform to the requirements of Sentence 3.4.3.2.(3).
- (5) Aisles in a Group A, Division 4 *occupancy*,
  - (a) shall be located so that there are not more than 20 seats between any seat and the nearest aisle, and
  - (b) shall be not less than 1 200 mm wide, except that an aisle serving less than 60 persons is permitted to be 750 mm wide.

### 3.3.2.10. Bleachers

- (1) Steps provided in aisles of bleachers of the telescopic type shall,
  - (a) have risers not more than 250 mm high, and
  - (b) have treads with a run not less than 280 mm.
- (2) If the vertical distance between seating platforms in bleachers is more than 280 mm, an intermediate step shall be provided the full width of the aisle and proportioned to provide two equal risers between platforms.
- (3) If the vertical distance between seating platforms in bleachers is more than 450 mm, two intermediate steps shall be provided the full width of the aisle so that there are three equal risers between platforms.
- (4) If the passageway between rows of seats is not a closed deck, footboards shall be provided so that,
  - (a) the total width of the footboards shall be not less than three-quarters of the centre-to-centre spacing between rows of seats, and
  - (b) the spacing between footboard members shall be not more than 25 mm.
- (5) Openings above footboards and below the seats in rows of bleachers shall be of a size that will prevent the passage of a sphere having a diameter more than 100 mm.

### 3.3.2.11. Libraries

- (1) Except as permitted by Sentence (2), a library book storage room that is not normally accessible to the public shall be separated from the remainder of the *building* by a *fire separation* with a *fire-resistance rating* not less than 2 h if it,

- (a) is more than 250 m<sup>2</sup> in area, or
  - (b) contains book stacks that,
    - (i) are more than 10 m high, or
    - (ii) penetrate more than one floor assembly.
- (2) The *fire separation* required by Sentence (1) is not required if the book storage room is *sprinklered*.
- (3) Open book shelves are permitted above and below a *mezzanine* floor in a library *building* provided the height of the shelves is not more than 2.1 m but not more than 75% of the floor-to-ceiling height of the space above or below the *mezzanine* floor assembly.

### 3.3.2.12. Stages for Theatrical Performances

- (1) A *stage* for theatrical performances and ancillary spaces, including workshops, dressing rooms and storage areas, shall be *sprinklered*.
- (2) A *fire separation* with a *fire-resistance rating* not less than 1 h shall be provided between a *stage* for theatrical performances and ancillary spaces, including workshops, dressing rooms and storage areas.
- (3) Except as permitted by Sentence (6), a *stage* for theatrical performances and ancillary spaces, including workshops, dressing rooms and storage areas, shall be separated from the seating area by a *fire separation* having a *fire-resistance rating* not less than 1 h, except for a proscenium opening protected with,
  - (a) a sprinkler deluge system conforming to the requirements of NFPA 13 “Installation of Sprinkler Systems”,
  - (b) an unframed fire curtain if the opening is not more than 20 m wide, or
  - (c) a semi-rigid fire curtain if the opening is more than 20 m wide.
- (4) A fire curtain required by Sentence (3) shall be of a type designed to close,
  - (a) automatically upon the actuation of the sprinkler system,
  - (b) automatically upon actuation of the fire alarm system,
  - (c) manually by remote control devices located at the curtain control panel and at each side of the *stage*, and
  - (d) automatically by heat-actuated devices.
- (5) At least two vents for the purpose of venting fire and smoke to the outside of a *building* shall be provided above a *stage* designed for theatrical performances and shall,
  - (a) have an aggregate area not less than one-eighth of the area of the *stage* behind the proscenium opening, and
  - (b) be arranged to open automatically upon actuation of the sprinkler system.
- (6) The *fire separation* referred to in Sentence (3) is not required between a *stage* and a seating area in a *floor area* that is *sprinklered*, provided a sprinkler deluge system is installed at the boundary between the *stage* and the seating area.

### 3.3.2.13. Risers for Stairs

- (1) In a Group A, Division 2 *occupancy* used for the serving of food and beverages, an interior flight of stairs with fewer than three risers is permitted provided it,
  - (a) is not less than 900 mm wide,
  - (b) is illuminated at all times that occupants are on the premises, and
  - (c) has a handrail on each side.

### 3.3.2.14. Storage Rooms

- (1) A room intended for the storage of *flammable liquids* or *combustible liquids* required by the Fire Code made under the *Fire Protection and Prevention Act, 1997* shall not be located above or below the *first storey* of the *building*.

- (3) A single *exit* is permitted from a *dwelling unit* provided the *exit* is an exterior doorway not more than 1.5 m above adjacent ground level and,
- (a) it is not necessary to travel up or down more than 1 *storey* to reach the *exit* door, or
  - (b) the uppermost floor level opens to a balcony not more than 6 m above adjacent ground level.
- (4) An egress door from either the uppermost *storey* or the lowest *storey* in a *dwelling unit*, as required in Sentence (2), need not be provided,
- (a) except as required by Sentence (8), if that *storey* is served by a stairway that,
    - (i) leads to a *public access to exit*,
    - (ii) has no direct access to any other *storey* in the *dwelling unit*, and
    - (iii) is separated from the other *storeys* in the *dwelling unit* by a *fire separation* having a *fire-resistance rating* of not less than 45 min,
  - (b) on the uppermost *storey* in the *dwelling unit* if the *dwelling unit* has not more than 2 *storeys* above the *first storey* of the *building*,
  - (c) if it is not necessary to travel either more than 18 m or more than 1 *storey* up or down within the *dwelling unit* to reach the egress door, or
  - (d) if that *storey* is,
    - (i) provided with a balcony conforming to Sentence (7),
    - (ii) not more than 2 *storeys* above or below the *dwelling unit* egress door, and
    - (iii) in a *building* that is not more than 6 *storeys* in *building height*.
- (5) In a *building of residential occupancy* not more than 3 *storeys* in *building height*, a doorway from a *dwelling unit* is permitted to open directly into an *exit* stairway provided the *dwelling unit* has a second and separate *means of egress*.
- (6) If a *dwelling unit* has a second and separate *means of egress*, one *means of egress* from a *dwelling unit* is permitted to pass through,
- (a) an interior corridor served by a single *exit*,
  - (b) an exterior balcony served by a single *exit* stairway, or
  - (c) an exterior passageway served by a single *exit* stairway.
- (7) Where a balcony is provided to meet the requirements of Sentence (3) or (4), the balcony shall have,
- (a) a solid floor having a *fire-resistance rating* not less than that required for a floor assembly between *suites*, and
  - (b) an area providing not less than 1.5 m<sup>2</sup> per *suite* occupant, based on *occupant load*, and a minimum dimension of 1 200 mm.
- (8) Each *dwelling unit* in a *building* conforming to Subclause 3.2.2.44.(1)(a)(ii) shall be served by,
- (a) a direct *exit* that is an exterior doorway located not more than 1.5 m above adjacent ground level, or
  - (b) a stairway that,
    - (i) leads to an exterior doorway not more than 1.5 m above adjacent ground level,
    - (ii) has no access to another *dwelling unit*, and
    - (iii) is separated from the remainder of the *building* with a *fire separation* having a *fire-resistance rating* not less than 1 h.

### 3.3.4.5. Automatic Locking Prohibition

- (1) Except for *hotels*, a door opening onto a *public corridor* that provides *access to exit* from a *suite* shall be designed not to lock automatically. (See Appendix A.)

### 3.3.4.6. Sound Transmission

- (1) Sound transmission class ratings of *building* assemblies shall conform to Section 5.9.

### 3.3.4.7. Stairs, Ramps, Landings, Handrails and Guards for Dwelling Units

- (1) Except as required by Article 3.3.4.8., stairs, ramps, landings, handrails and interior *guards* within a *dwelling unit* shall conform to the applicable requirements in Section 9.8.
- (2) Except as provided in Sentence (3), exterior stairs, ramps, landings, handrails and *guards* serving a single *dwelling unit* shall conform to the applicable requirements in Section 9.8. and Sentence 3.1.20.1.(1).
- r<sub>3</sub> (3) Loads on exterior *guards* serving a *single dwelling unit* shall comply with Part 4.

### 3.3.4.8. Protection of Openable Windows

- (1) Except as provided by Sentence (2), openable windows in *suites of residential occupancy* shall be protected by,
- r<sub>5</sub> (a) a *guard* with a minimum height of 1 070 mm constructed in accordance with Article 3.3.1.17., or
- (b) a mechanism capable of controlling the free swinging or sliding of the openable part of the window so as to limit any clear unobstructed opening to a size that will prevent the passage of a sphere having a diameter more than 100 mm.
- (2) Windows need not be protected in accordance with Sentence (1) where,
- (a) the only opening having greater dimensions than those allowed by Clause (1)(b) is located higher than 1 070 mm above the finished floor, or
- (b) the bottom edge of the openable portion of the window is located less than 1 800 mm above the floor or ground on the other side of the window.

### 3.3.4.9. Stud Wall Reinforcement

- r<sub>4</sub> (1) If wood wall studs or sheet steel wall studs enclose the main bathroom in a *dwelling unit*, reinforcement shall be installed to permit the future installation of the following:
- (a) for a water closet, a grab bar described in Clauses 3.8.3.8.(3)(a) and a grab bar described in Clause 3.8.3.8.(3)(c),
- (b) for a shower, a grab bar described in Clause 3.8.3.13.(2)(f), and
- (c) for a bathtub, a grab bar described in Clause 3.8.3.13.(4)(c).
- (See Appendix A.)

### 3.3.4.10. Resistance to Forced Entry

- (1) Resistance to forced entry into *dwelling units* shall conform to the applicable requirements in Articles 9.7.5.2. and 9.7.5.3.

## 3.3.5. Industrial Occupancy

### 3.3.5.1. Scope

- (1) This Subsection applies to *industrial occupancies*.

### 3.3.5.2. Fire Extinguishing Systems

- (1) In addition to other requirements in this Division for the installation of automatic fire extinguishing systems, an appropriate fire extinguishing system shall be installed in every *industrial occupancy floor area* to provide protection if required by,
- (a) the Fire Code made under the *Fire Protection and Prevention Act, 1997*, or
- (b) the CCBFC NRCC 53303, “National Fire Code of Canada”, in the absence of provisions referred to in Clause (a).

### 3.4.3.5. Headroom Clearance (See Appendix A.)

- (1) Except as provided by Sentences (2), (4) and (5), every *exit* shall have a clear height over the clear width of the *exit* of not less than 2 100 mm.
- (2) The clear height of stairways shall be measured vertically, over the clear width of the stairway, from a straight line tangent to the tread and landing nosings to the lowest point above, and shall not be less than 2 050 mm.
- (3) The clear height of landings shall be measured vertically, over the clear width of the landing, to the lowest point above.
- (4) Except as permitted by Sentence (5), the clear height of doorways shall not be less than 2 030 mm.
- (5) No door closer or other device shall be installed so as to reduce the clear height of a doorway to less than 1 980 mm.

## 3.4.4. Fire Separation of Exits

### 3.4.4.1. Fire-Resistance Rating of Exit Separations

- r<sub>5</sub> (1) Except as provided by Sentences (2), (3) and (5) and Sentences 3.3.5.4.(3), 3.4.4.2.(2), 3.4.4.3.(1) and 3.13.3.1.(3), every *exit* shall be separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* not less than that required by Subsection 3.2.2., but not less than 45 min, for,
  - (a) the floor assembly above the *storey*, or
  - (b) the floor assembly below the *storey*, if there is no floor assembly above.
- (2) The *fire-resistance rating* of the *fire separation* referred to in Sentence (1) need not be more than 2 h.
- r<sub>5</sub> (3) In a *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A., the *fire-resistance rating* of the *fire separation* referred to in Sentence (1) shall not be less than 1.5 h.
- r<sub>5</sub> (4) If an *exit* stair in an assembly hall or *theatre* serves more than one balcony level, the *exit* stair shall be separated from the remainder of the *building* in conformance with Sentence (1).
- r<sub>5</sub> (5) The path of *exit* travel may lead from an *exit* door or *exit* enclosure through *open air* parking that is located below a roof or floor assembly that is part of the *building* served by the *exit* door or *exit* enclosure where,
  - (a) the portion of the path of *exit* travel that leads through the *open air* parking is not more than 9 m in length measured from the *exit* door to a point at ground level at the perimeter of the *building*,
  - (b) measures are taken to prevent vehicles intended to park in spaces adjacent to the path of *exit* travel from encroaching on the path of *exit* travel, and
  - (c) an alternate *means of egress* not leading through the *open air* parking is available from the interior side of the door opening onto the path of *exit* travel through the *open air* parking area.

### 3.4.4.2. Exits Through Lobbies

- (1) Except as permitted by Sentence (2), no *exit* from a *floor area* above or below the *first storey* shall lead through a lobby.
- (2) Not more than one *exit* from a *floor area* is permitted to lead through a lobby provided,
  - (a) the lobby floor is not more than 4.5 m above *grade*,
  - (b) the path of travel through the lobby to the outdoors is not more than 15 m,
  - (c) the adjacent rooms or premises having direct access to the lobby do not contain a *residential occupancy* or an *industrial occupancy*, except that *dwelling units* may open directly onto the lobby where,
    - (i) from the interior of the *exit* stair that opens onto the lobby there is alternate *means of egress* not leading through the lobby and such *means of egress* is entirely within the same *storey* as the lobby, or
    - (ii) the *floor area* is *sprinklered*,

- (d) except as required by Clause (g), the lobby is not located within an *interconnected floor space* other than as described in Sentence 3.2.8.2.(6),
- (e) the lobby conforms to the requirements for *exits*, except that,
  - (i) rooms other than *service rooms* and storage rooms are permitted to open onto the lobby,
  - (ii) the *fire separation* between the lobby and a room used for the sole purpose of control and supervision of the *building* need not have a *fire-resistance rating*,
  - (iii) the *fire separation* between the lobby and adjacent *occupancies* that are permitted to open onto the lobby need not have a *fire-resistance rating* provided the lobby and adjacent *occupancies* are *sprinklered*, and
  - (iv) passenger elevator entrances are permitted to open onto the lobby provided the elevator entrance doors are designed to remain closed except while loading and unloading,
 (See Appendix A.)
- (f) a *fire separation*, constructed in accordance with Sentence 3.4.4.1.(1), is maintained between the lobby and any *exit* permitted by this Sentence to lead through the lobby, and
- (g) that if the *exit* serves a *hotel*, the lobby is not located within an *interconnected floor space*.

### 3.4.4.3. Exterior Passageway Exceptions

- (1) The requirements of Sentences 3.4.4.1.(1) and 3.2.3.13.(1) and (3) do not apply to an exterior *exit* passageway provided,
  - (a) not less than 50% of the exterior side is open to the outdoors, and
  - (b) an *exit* stair is provided at each end of the passageway.

### 3.4.4.4. Integrity of Exits

- (1) A *fire separation* that separates an *exit* from the remainder of the *building* shall have no openings except for,
  - (a) standpipe and sprinkler piping,
  - (b) electrical wires and cables, totally enclosed *noncombustible* raceways and *noncombustible* piping that serve only the *exit*,
  - (c) openings required by the provisions of Subsection 3.2.6.,
  - (d) *exit* doorways,
  - (e) wired glass and glass block permitted by Article 3.1.8.14., and
  - (f) a sprinkler protected glazed wall assembly conforming to Article 3.1.8.18.
- (2) *Exits* within scissors stairs and other contiguous *exit* stairways shall be separated from each other by a smoke-tight *fire separation* having a *fire-resistance rating* not less than that required for the floor assembly through which they pass.
- (3) *Fire separations* separating contiguous stairs described in Sentence (2) shall not be pierced by doorways, ductwork, piping or any other openings that affect the continuity of the separation.
- (4) A fuel-fired *appliance* shall not be installed in an *exit*.
- (5) An *exit* shall not be used as a *plenum* for a heating, ventilating or *air-conditioning* system.
- (6) An *exit* shall be designed for no purpose other than for exiting, except that an *exit* is permitted also to be designed to serve as an access to a *floor area*.
- (7) A *service room* shall not open directly into an *exit*.
- (8) Storage rooms, washrooms, toilet rooms, laundry rooms and similar ancillary rooms shall not open directly into an *exit*.
- (9) *Service spaces* referred to in Sentence 3.2.1.1.(9) shall not open directly into an *exit*.
- (10) In elementary and secondary schools, an *exit* shall be designed so that it does not serve as an access from one portion of a *floor area* to another portion of the same *floor area*.



## 3.4.5. Exit Signs

### 3.4.5.1. Exit Signage

- (1) Except as provided by Sentences (9) and (10), every *exit* door shall have an *exit* sign placed over or adjacent to it if the *exit* serves,
- a *building* more than 2 *storeys* in *building height*,
  - a *building* having an *occupant load* of more than 150, or
  - a room or *floor area* that has a fire escape as part of a required *means of egress*.
- (2) Except as provided by Sentence (7), every *exit* sign shall,
- be visible on approach to the *exit*,
- r<sub>5</sub>** (b) consist of a green pictogram and white graphic symbol meeting the visibility specifications referred to in ISO 3864-1, “Graphical Symbols – Safety Colours and Safety Signs – Part 1: Design Principles for Safety Signs and Safety Markings”, and
- (c) conform to the dimensions indicated in ISO 7010, “Graphical Symbols - Safety Colours and Safety Signs - Safety Signs Used in Workplaces and Public Areas” for the following symbols:
- E001 emergency exit left,
  - E002 emergency exit right,
  - E005 90-degree directional arrow, and
  - E006 45-degree directional arrow.
- (See Appendix A.)
- (3) Internally illuminated *exit* signs shall,
- be continuously illuminated, and
  - where illumination of the sign is powered by an electrical circuit, be constructed in conformance with CSA 22.2 No. 141, “Emergency Lighting Equipment”.
- (4) Externally illuminated *exit* signs shall be continuously illuminated by a light fixture supplied by an electrical circuit.
- (5) Photoluminescent and self-luminous *exit* signs shall,
- conform to CAN/ULC-S572, “Photoluminescent and Self-Luminous Signs and Path Marking Systems”,
- r<sub>5</sub>** (b) be labelled in accordance with the time duration for which they have been tested and *listed*,
- r<sub>5</sub>** (c) be so installed that upon failure of the regular power they will continue to be illuminated for the applicable time duration specified in Clause 3.2.7.4.(1)(b), and
- r<sub>5</sub>** (d) be continuously illuminated if reliant on an external energy source to energize the reflective coating of the sign.  
(See Appendix A.)
- (6) If illumination of an *exit* sign is provided from an electrical circuit, that circuit shall,
- serve no equipment other than emergency lighting in the area where *exit* signs are installed, and
  - be connected to an emergency power supply as described in Sentence 3.2.7.4.(1)
- (7) Where no *exit* is visible from a *public corridor*, from a corridor used by the public in a Group A or B *major occupancy* or from principal routes serving an open *floor area* having an *occupant load* of more than 150, an *exit* sign conforming to Clauses (2)(b) and (c) with an arrow or other indicator pointing at the direction of egress shall be provided.
- (8) Except for egress doorways described in Sentence 3.3.2.3.(4), an *exit* sign conforming to Sentences (2) to (6) shall be placed over or adjacent to every egress doorway from rooms with an *occupant load* more than 60 in Group A, Division 1 *occupancies*, dance halls, licensed beverage establishments and other similar *occupancies* that, when occupied, have lighting levels below the level that would provide easy identification of the egress doorway.
- (9) Except for *suite* doors opening directly to the exterior, every *exit* serving a *hotel* shall have an *exit* sign placed over or adjacent to it.

(10) An *exit* sign is not required within a *suite* containing a Group B, Division 3 *occupancy* if the following requirements are met:

- (a) the *suite* contains sleeping accommodation for not more than 10 persons, and
- (b) not more than 6 occupants require assistance in evacuation in case of an emergency.

### 3.4.5.2. Signs Within Exit Facilities

(1) In a *building* more than 2 *storeys* in *building height*, any part of an *exit* ramp or stair that continues up or down past the lowest *exit level* shall be clearly marked by a sign indicating that it does not lead to an *exit*.

(2) An *exit* stair serving a *building* more than 6 *storeys* in *building height* shall be clearly marked by signs indicating that it does not lead to an *exit* at the roof level. (See Appendix A.)

### 3.4.6. Types of Exit Facilities (See Appendix A.)

#### r4 3.4.6.1. Surface Finish of Ramps and Stairs

- (1) The surfaces of ramps, landings and treads shall,
  - (a) have a finish that is slip-resistant, and
  - (b) if accessible to the public, have a colour contrast or a distinctive visual pattern to demarcate,
    - (i) the leading edge of the tread,
    - (ii) the leading edge of the landing, and
    - (iii) the beginning and end of a ramp.

- (2) A tactile attention indicator conforming to Article 3.8.3.18. shall be installed,
  - (a) at the top of the stairs, starting one tread depth back from the edge of the top stair, and
  - (b) at the leading edge of landings where a doorway opens onto stairs, starting one tread depth back from the edge of the landing.
 (See Appendix A.)

- (3) Treads and landings of exterior *exit* stairs shall be designed to be free of ice and snow accumulations if the stairs,
  - (a) are more than 10 m high, or
  - (b) serve a *hotel*.

#### 3.4.6.2. Minimum Number of Risers

- (1) Except as permitted by Sentence 3.3.2.13.(1), every flight of interior stairs shall have no fewer than 3 risers.

#### 3.4.6.3. Maximum Vertical Rise of Stair Flights and Required Landings

(1) No flight of stairs shall have a vertical rise of more than 3.7 m between floors or landings, except that a flight of stairs serving as an *exit* in a Group B, Division 2 or 3 *occupancy* shall have a vertical rise not more than 2.4 m between floors or landings.

- (2) Except as provided by Sentence (3), a landing shall be provided,
  - (a) at the top and bottom of each flight of interior and exterior stairs,
  - (b) at the top and bottom of every section of ramp,
  - (c) where a doorway opens onto a stair or ramp,
  - (d) where a ramp opens onto a stair, and
  - (e) where a stair opens onto a ramp.

- (3) A landing may be omitted at the bottom of an exterior stair or ramp, provided there is no gate, door or fixed obstruction within the lesser of,
- (a) the width of the stair or ramp, or
  - (b) 1 100 mm.

**3.4.6.4. Dimensions of Landings**

- (1) Except as provided by Sentence (4), the length and width of a landing shall be at least the width of the stairway or ramp in which it occurs, except that in a straight run the length of the landing need not be more than 1 100 mm.

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## Section 3.6. Service Facilities

### 3.6.1. General

#### 3.6.1.1. Scope

- (1) The provisions of this Section apply to *horizontal service spaces*, *vertical service spaces*, *attic or roof spaces*, ducts, crawl spaces, shaft spaces, *service rooms*, and mechanical penthouses, and facilities contained in any of them.
- (2) Except for *plenum* requirements in 3.6.4.3., the fire safety characteristics of heating, ventilating and *air-conditioning* systems shall comply with Part 6.

#### 3.6.1.2. Reserved

#### 3.6.1.3. Storage Use Prohibition

- (1) *Service spaces* shall not be designed to facilitate subsequent use as storage space.

#### 3.6.1.4. Reserved

#### 3.6.1.5. Fixed Access Ladders

- (1) If a fixed ladder is installed to provide access to a roof of a *building*, the design and installation of the attachment and anchorage system for the ladder shall be as described in MMAH Supplementary Standard SB-8, “Design, Construction and Installation of Anchorage System for Fixed Access Ladders”.

### 3.6.2. Service Rooms

#### 3.6.2.1. Fire Separations around Service Rooms

- (1) Except as permitted by Sentences (2) and (8) to (10), fuel-fired *appliances* shall be installed in *service rooms* separated from the remainder of the *building* by *fire separations* having a *fire-resistance rating* not less than 1 h. (See Appendix A.)
- (2) Except as required by Sentence (3), a fuel-fired *appliance* that serves only one room or *suite* is not required to be installed in a *service room* separated from the remainder of the *building*.
- (3) A solid fuel fired *appliance* shall not be located in a *repair garage*, a *storage garage*, or any other location where it could be exposed to flammable vapours or gases unless,
  - (a) it is enclosed in a *service room* that is separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* not less than 1 h,
  - (b) it is supplied with combustion air directly from outside the *building*, and
  - (c) the heat that it generates is supplied indirectly to the space served by means of ducts or piping.

- (4) A *service room* containing an incinerator shall be separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* not less than 2 h.
- (5) Equipment that uses a liquid having a *flash point* below 93.3°C shall be installed in a *service room* separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* not less than 1 h.
- (6) Electrical equipment that is required to be located in a *service room* by a regulation made under the *Electricity Act, 1998*, shall be installed in a *service room* separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* not less than 1 h.
- (7) Except as permitted by Sentence (8), in a *storey* that is not *sprinklered*, a *service room* that contains service equipment other than that addressed by Sentences (1) to (6), shall be separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* not less than 1 h.
- (8) If a *service room* referred to in Sentence (7) contains a limited quantity of service equipment, and the service equipment neither constitutes a fire hazard nor is essential to the operation of fire safety systems in the *building*, the requirements for a *fire separation* shall not apply.
- (9) A *fire separation* is not required between a fireplace and the space it serves.
- e<sub>3</sub> (10) A *fire separation* is not required between a rooftop *appliance* and the *building* it serves.
- (11) The *fire separation* provisions for a fuel-fired *appliance* in a portable classroom shall conform to Article 3.9.3.7.

### 3.6.2.2. Service Rooms Under Exits

- (1) A *service room* containing service equipment subject to possible explosion, such as *boilers* operating in excess of 100 kPa (gauge) and some types of refrigerating machinery and transformers, shall not be located directly under a required *exit*.

### 3.6.2.3. Service Equipment

- (1) A *service room* containing space heating, space cooling and service water heating *appliances* is permitted to contain other service equipment such as electrical service equipment.

### 3.6.2.4. Incinerator Rooms

- (1) A *service room* containing an incinerator shall not contain other fuel-fired *appliances*.

### 3.6.2.5. Combustible Refuse Storage

- (1) Except as required by Sentence 3.6.3.3.(9), a room for the storage of *combustible* refuse shall be,  
(a) separated from the remainder of the *building* by a *fire separation* with a *fire-resistance rating* not less than 1 h, and  
(b) *sprinklered*.  
(See Appendix A.)

### 3.6.2.6. Door Swing for Service Rooms

- (1) A swing-type door from a *service room* containing a *boiler* or incinerator shall swing outward from the room, except that the door shall swing inward if the door opens onto a corridor or any room used for an *assembly occupancy*.

### **3.7.4.13. Floor Drains**

(1) A floor drain shall be installed in a washroom for *public use* that contains a urinal or a water closet equipped with an automatic flushing device. (See Appendix A.)

### **3.7.4.14. Grab Bar Installation**

(1) Grab bars that are installed shall resist a minimum load of 1.3 kN applied vertically or horizontally.

### **3.7.4.15. Clearances for Water Closets**

e<sub>3</sub> (1) Except in a *dwelling unit* and except as required by Section 3.8., a minimum clearance of 380 mm shall be provided in front of a water closet. (See Appendix A.)

### **3.7.4.16. Privacy**

(1) If a room contains not more than 1 water closet, the doorway to the room shall be provided with a full height door that is capable of being locked from the inside.

(2) Except in a room for *private use*, water closets, urinals, lavatories, showers and bathtubs shall not be visible from the entrance to the room where it contains at least,

- (a) two water closets,
- (b) one water closet and one urinal,
- (c) one shower stall, or
- (d) one bathtub.

### **3.7.4.17. Water Temperature Control**

(1) A *water distribution system* supplying hot water to *plumbing fixtures* shall conform to the requirements in Subsection 7.6.5.

### **3.7.4.18. Drinking Water**

(1) On every floor where work will be performed and within 100 m of any area where work will be performed, *potable* water shall be provided from,

- (a) a fountain with an upward jet,
- (b) a tap from a piped water supply, or
- (c) a tap from a covered vessel.

### **3.7.4.19. Pharmacies**

(1) Every *pharmacy* shall be provided with a sink with hot and cold *potable* water for washing utensils used in the preparation, service or storage of drugs.

## **3.7.5. Health Care Facility Systems**

### **3.7.5.1. Electrical Systems**

(1) In anaesthetizing locations, electrical systems shall be designed, constructed, installed and tested in conformance with CSA Z32, "Electrical Safety and Essential Electrical Systems in Health Care Facilities".

### 3.7.5.2. Medical Gas Piping

- r<sub>5</sub> (1) All medical gas piping systems shall be designed, constructed, installed and tested in conformance with CSA Z7396.1, “Medical Gas Piping Systems - Part 1: Pipelines for Medical Gases and Vacuum”.

### 3.7.5.3. Shielding of X-Ray Equipment

- (1) Every installation of an *x-ray machine* or of *x-ray equipment* in a *building* shall be shielded to protect any person who could be exposed to radiation inside and outside the *building*. (See Appendix A.)

## 3.7.6. Food Premises

### 3.7.6.1. Application

- (1) The requirements of this Subsection apply to all *food premises*.

### 3.7.6.2. Room Finishes

- (1) Except as provided in Sentence (2), floors and floor coverings shall be tight, smooth and non-absorbent in rooms where,
- (a) food or drink for human consumption, or an ingredient of food or drink for human consumption, is manufactured, processed, prepared, stored, displayed, handled, served, distributed, sold or offered for sale,
  - (b) utensils are washed, or
  - (c) washing *fixtures* or toilet *fixtures* are located.
- (2) Carpeting may be used in areas where food is served.
- (3) Wall and ceiling finishes of rooms and passageways shall be easy to clean.

### 3.7.6.3. Location of Plumbing Fixtures

- (1) A room containing a water closet shall be located where,
- (a) it does not open directly into any room or area where food or drink for human consumption, or an ingredient of food or drink for human consumption, is intended to be stored, prepared, processed, distributed, served, sold or offered for sale, and
  - (b) it is not necessary for the public to go through the food preparation areas to gain access to the *plumbing fixtures*.
- (2) Except as permitted in Sentence (3), a room containing *plumbing fixtures* for the public and employees in a restaurant shall be located in the restaurant.
- (3) A room containing *plumbing fixtures* for the public in Sentence (2) need not be located in the restaurant if,
- (a) the room is located in the *building* containing the restaurant, and
  - (b) the distance of travel between the restaurant and the room is not more than 45 m.

### 3.7.6.4. Lavatories, Appliances and Sinks

- (1) A separate lavatory for the handwashing of employees shall be constructed in a location convenient for employees in each manufacturing, processing and preparation area.
- (2) If equipment and facilities for the cleaning and sanitizing of utensils are provided, they shall consist of,
- (a) mechanical equipment, or



### 3.8.1.3. Barrier-Free Path of Travel

- (1) Except as required in Sentence (4) and except as permitted in Subsection 3.8.3., every *barrier-free* path of travel shall provide an unobstructed width of at least 1 100 mm for the passage of wheelchairs.
- (2) Interior and exterior walking surfaces that are within a *barrier-free* path of travel shall,
- have no opening that will permit the passage of a sphere more than 13 mm in diam,
  - have any elongated openings oriented approximately perpendicular to the direction of travel,
  - be stable, firm and slip-resistant,
  - be bevelled at a maximum slope of 1 in 2 at changes in level not more than 13 mm, and
  - be provided with sloped floors or ramps at changes in level more than 13 mm.
- (3) A *barrier-free* path of travel is permitted to include ramps, passenger elevators or other platform equipped passenger elevating devices to overcome a difference in level.
- r4 (4) Every *barrier-free* path of travel less than 1 600 mm in width shall be provided with an unobstructed space not less than 1 800 mm in width and 1 800 mm in length located not more than 30 m apart. (See Appendix A.)
- r4 (5) Where the headroom of an area in a *barrier-free* path of travel is reduced to less than 1 980 mm, a guardrail or other barrier with its leading edge at or below 680 mm from the finished floor shall be provided. (See Appendix A.)
- r4 (6) A normally occupied *floor area* that is not required by Article 3.8.2.1. to have a *barrier-free* path of travel shall meet the following requirements:
- interior walking surfaces throughout the normally occupied *floor area* shall comply with Clauses (2)(a) to (e), and
  - where the headroom of an area in a corridor or aisle in the normally occupied *floor area* is reduced to less than 1 980 mm, a guardrail or other barrier with its leading edge at or below 680 mm from the finished floor shall be provided. (See Appendix A.)

### r4 3.8.1.4. Escalators and Moving Walks

- (1) In a *building* in which an escalator or inclined moving walk provides access to any floor level above or below the entrance floor level, an interior *barrier-free* path of travel shall be provided to that floor level. (See Appendix A.)
- (2) The route from the escalator or inclined moving walk to the *barrier-free* path of travel required by Sentence (1) shall be clearly indicated by appropriate signs.
- (3) In a *building* in which a moving walk provides access between areas on the same floor level, a *barrier-free* path of travel shall be provided between the areas served by the moving walk.

### 3.8.1.5. Controls

- r4 (1) Except as required by Sentences 3.5.2.2.(1) and 3.8.3.5.(1) for elevators and Sentence 3.8.3.3.(17) for power door operator controls, controls for the operation of *building* services or safety devices, including electrical switches, thermostats and intercom switches, intended to be operated by the occupant and located in a *barrier-free* path of travel shall,
- r5 (a) be accessible to a person in a wheelchair using a side approach,
- (b) be operable,
- using one hand and with a force of not more than 22.2 N, in the case of a manual pull station, and
  - using a closed fist and with a force of not more than 22.2 N, in the case of all other controls, and
- (c) be mounted,
- 1 200 mm above the finished floor, in the case of a thermostat or a manual pull station, and
  - not less than 900 mm and not more than 1 100 mm above the finished floor, in the case of all other controls.
- (See Appendix A.)
- (2) A signal intended for the public to indicate the operation of a *building* security system that controls access to a *building* shall consist of an audible and visual signal.

### 3.8.1.6. Illumination

(1) All portions of a *barrier-free* path of travel shall be equipped to provide a level of illumination in accordance with Sentence 3.2.7.1.(1).

### 3.8.2. Occupancy Requirements

#### r4 3.8.2.1. Areas Requiring Barrier-Free Path of Travel

(1) Except as permitted by Sentence (3), a *barrier-free* path of travel from the entrances required by Sentences 3.8.1.2.(1) and (3) to be *barrier-free* shall be provided,

- (a) throughout the entrance *storey*,
- (b) except as permitted by Sentence (2), to and throughout all normally occupied *floor areas* and rooftop amenity spaces, and (See Appendix A.)
- (c) throughout all normally occupied *floor areas* and rooftop amenity spaces that, (See Appendix A.)
  - (i) are exempt from the application of Clause (b), and
  - (ii) are served by a passenger elevator, escalator, inclined moving walk, or other platform equipped passenger elevating device.

(See Appendix A.)

(2) A *barrier-free* path of travel described in Clause (1)(b) is not required to extend,

- (a) to *floor areas* or portions of *floor areas* containing a Group B, Division 2 or 3 *occupancy* that are not required by Article 3.5.2.1. to be connected by a ramp or served by an elevator,
- (b) to Group C or Group D *occupancies* that are in *floor areas* in a *building* that,
  - (i) is three or fewer *storeys* in *building height*, and
  - (ii) has a *building area* not exceeding 600 m<sup>2</sup>,
 (See Appendix A.)
- (c) to Group F, Division 2 or 3 *occupancies* that are not required by Sentence 3.8.2.2.(1) to be served by an elevator,
- (d) to portions of restaurants and licensed beverage establishments where the same amenities and uses are provided on other *floor areas* that have a *barrier-free* path of travel, or
- (e) to portions of child care facilities that have all entrance doors at floor levels that do not have a *barrier-free* path of travel.

(See Appendix A.)

(3) A *barrier-free* path of travel described in Sentence (1) is not required to extend,

- (a) into *service rooms*,
- (b) into elevator machine rooms,
- (c) into janitors' rooms,
- (d) into *service spaces*,
- (e) into crawl spaces,
- (f) into *attic or roof spaces*,
- (g) into *high hazard industrial occupancies*,
- (h) to portions of a *floor area* with fixed seats in an *assembly occupancy* where these portions are not part of the *barrier-free* path of travel to,
  - (i) spaces designated for wheelchair use,
  - (ii) seats designated for *adaptable seating*, or
  - (iii) spaces for the storage of wheelchairs and *mobility assistive devices*,
- (i) to *suites* of *residential occupancy* that are in *storeys* other than the entrance *storey* and that have all entrance doors at floor levels that are not required to have a *barrier-free* path of travel,
- (j) except as required by Sentence (5), on the inside of a *suite* of *residential occupancy*, or
- (k) to portions of a *floor area* that are not at the same level as the entry level, provided amenities and uses provided on any raised or sunken level are accessible on the entry level by means of a *barrier-free* path of travel.

(See Appendix A.)

- r4** (17) Except where a proximity scanning device is installed in conformance with Sentence (18), the control for a power door operator required by Sentence (4), (5) or (6) shall,
- (a) have a face dimension of not less than,
    - (i) 150 mm in diameter where the control is circular, or
    - (ii) 50 mm by 100 mm where the control is rectangular,
  - (b) be operable using a closed fist,
  - (c) be located so that,
    - (i) its centre is located not less than 900 mm and not more than 1 100 mm from the finished floor or ground, or
    - (ii) it extends from not more than 200 mm to not less than 900 mm above the finished floor or ground, (See Appendix A.)
  - (d) be located not less than 600 mm and not more than 1 500 mm beyond the door swing where the door opens towards the control,
  - (e) be located in a clearly visible position, and
  - (f) contain a sign incorporating the International Symbol of Access.
- r4** (18) A proximity scanning device that activates a power door shall be capable of detecting a person in a wheelchair. (See Appendix A.)
- r4** (19) A normally occupied *floor area* that is not required by Article 3.8.2.1. to have a *barrier-free* path of travel shall comply with the following requirements:
- (a) all doorways in *public corridors* in the normally occupied *floor area* shall comply with Sentence (1),
  - (b) door opening devices that are the only means of operation on doors in the normally occupied *floor area* shall comply with Sentence (3), (See Appendix A.)
  - (c) where a vision panel is provided in a door in the normally occupied *floor area*, the panel shall comply with Sentence (14),
  - (d) doors consisting of a sheet of glass in the normally occupied *floor area* shall comply with Sentence (15), and
  - (e) where a power door operator is installed for doors in the normally occupied *floor area*, it shall comply with Sentences (16) and (17).

### **3.8.3.4. Ramps**

- (1) Ramps located in a *barrier-free* path of travel shall,
  - (a) have a minimum width of 900 mm between handrails,
  - (b) have a maximum gradient of 1 in 12, (See Appendix A.)
  - (c) have a level area of at least 1 670 mm by 1 670 mm at the top and bottom of a ramp and where a door is located in a ramp, so that the level area extends at least 600 mm beyond the latch side of the door opening, except that where the door opens away from the ramp, the area extending beyond the latch side of the door opening may be reduced to 300 mm, (See Appendix A.)
  - (d) have a level area at least 1 670 mm long and at least the same width as the ramp,
    - (i) at intervals of not more than 9 m along its length, and
    - (ii) where there is a change of 90° or more in the direction of the ramp,
- r4** (e) except as provided in Sentence (2), be equipped with handrails on both sides that shall,
  - (i) be continuously graspable along their entire length and have circular cross-section with an outside diameter not less than 30 mm and not more than 40 mm, or any non-circular shape with a graspable portion that has a perimeter not less than 100 mm and not more than 155 mm and whose largest cross-sectional dimension is not more than 57 mm,
  - (ii) be not less than 865 mm and not more than 965 mm high, measured vertically from the surface of the ramp, except that handrails not meeting these requirements are permitted provided they are installed in addition to the required handrail,
  - (iii) be terminated in a manner that will not obstruct pedestrian travel or create a hazard,
  - (iv) extend horizontally not less than 300 mm beyond the top and bottom of the ramp,
- r4** (v) be provided with a clearance of not less than 50 mm between the handrail and any wall or *guard* to which it is attached, and
- (vi) be designed and constructed such that handrails and their supports will withstand the loading values obtained from the nonconcurrent application of a concentrated load not less than 0.9 kN applied at any point and in any direction for all handrails and a uniform load not less than 0.7 kN/m applied in any direction to the handrail,

- (f) except as provided in Sentence (2), have a wall or a *guard* on both sides and where a *guard* is provided the *guard* shall,
  - r<sub>4</sub> (i) be not less than 1 070 mm measured vertically to the top of the *guard* from the ramp surface, and
  - (ii) be designed so that no member, attachment or opening located between 140 mm and 900 mm above the ramp surface being protected by the *guard* will facilitate climbing,
- (g) be provided,
  - r<sub>4</sub> (i) with a curb at least 50 mm high on any side of the ramp where no solid enclosure or solid *guard* is provided, and
  - r<sub>4</sub> (ii) with railings or other barriers that extend to within 50 mm of the finished ramp surface or have a curb not less than 50 mm high, and
- r<sub>4</sub> (h) except as provided in Sentence (2), where the ramp is wider than 2 200 mm, have an intermediate handrail with a clear width of 900 mm between the intermediate handrail and one of the handrails described in Clause (e).
- r<sub>4</sub> (2) Where a ramp serves as an aisleway for fixed seating, the requirements for handrails in Clauses (1)(e) and (h) and for walls or *guards* in Clause (1)(f) need not apply. (See Appendix A.)
- (3) Floors or walks in a *barrier-free* path of travel having a slope steeper than 1 in 20 shall be designed as ramps. (See Appendix A.)

### 3.8.3.5. Passenger Elevating Devices

- r<sub>5</sub> (1) A passenger elevating device referred to in Article 3.8.2.1. shall conform to CSA B355, “Lifts for Persons with Physical Disabilities”.

### r<sub>4</sub> 3.8.3.6. Wheelchair Spaces and Adaptable Seating

- (1) Spaces designated for wheelchair use required by Sentence 3.8.2.1.(4) shall be,
  - (a) clear and level or level with removable seats,
  - (b) not less than 900 mm wide and not less than,
    - (i) 1 525 mm long where designed to permit a wheelchair to enter from a side approach, and
    - (ii) 1 220 mm long where designed to permit a wheelchair to enter from the front or rear of the space,
  - (c) arranged so that,
    - (i) at least two of the designated spaces are side by side, and
    - (ii) at least one fixed seat for a companion is located beside,
      - (A) each group of designated spaces, if two or more designated spaces are arranged side by side in a group, and
      - (B) each designated space that is not part of a group described in Sub-subclause (A),
 (See Appendix A.)
  - (d) located adjoining a *barrier-free* path of travel without infringing on egress from any row of seating or any aisle requirements, and
  - (e) situated, as part of the designated seating plan, to provide a choice of viewing location and a clear view of the event taking place.
- (2) Fixed seats designated for *adaptable seating* required by Sentence 3.8.2.1.(4) shall be,
  - (a) located adjoining a *barrier-free* path of travel without infringing on egress from any row of seating or any aisle requirements,
  - (b) equipped with a movable or removable armrest on the side of the seat adjoining the *barrier-free* path of travel, and
  - (c) situated, as part of the designated seating plan, to provide a choice of viewing location and a clear view of the event taking place.
- (3) In an *assembly occupancy* with fixed seats, space shall be provided for the storage of wheelchairs and *mobility assistive devices* in accordance with the following requirements:
  - (a) at least one storage space not less than 810 mm by 1 370 mm shall be provided where the *assembly occupancy* has not more than 200 fixed seats and at least two such storage spaces shall be provided where the *assembly occupancy* has more than 200 fixed seats, and

- (b) the storage space or spaces shall be located on the same level and in proximity to the spaces designated for wheelchair use and seats designated for *adaptable seating*.

### **3.8.3.7. Assistive Listening Devices**

- (1) In *buildings of assembly occupancy*, all classrooms, auditoria, meeting rooms and *theatres* with an area of more than 100 m<sup>2</sup> and an *occupant load* of more than 75 shall be equipped with assistive listening systems encompassing the entire seating area. (See Appendix A.)

### **r4 3.8.3.8. Water Closet Stalls**

- (1) Every *barrier-free* water closet stall in a washroom described in Sentence 3.8.2.3.(3) or (4) shall,
  - (a) have a clear turning space at least 1 500 mm in diameter, (See Appendix A.)
  - (b) be equipped with a door that shall,
    - (i) be capable of being latched from the inside with a mechanism that is operable using a closed fist,
    - (ii) when the door is in an open position, have a clear opening of at least 860 mm,
    - (iii) swing outward, unless 820 mm by 1 440 mm clear floor area is provided within the stall to permit the door to be closed without interfering with the wheelchair, (See Appendix A.)
    - (iv) be provided with spring-type or gravity hinges so that the door closes automatically,
    - (v) be provided with a door pull on both sides of the door, near the latch side of the door, located at a height not less than 900 mm and not more than 1 100 mm above the finished floor, (See Appendix A.)
    - (vi) be aligned with a clear transfer space required by Subclause (2)(a)(ii) or Clause (2)(b), and
    - (vii) be capable of having the latch required by Subclause (i) released from the outside in case of an emergency,
  - (c) be equipped with a water closet conforming to Article 3.8.3.9. that is located in accordance with Clause (2)(a) or (b),
  - (d) Reserved
  - (e) be equipped with a coat hook mounted not more than 1 200 mm above the finished floor on a side wall and projecting not more than 50 mm from the wall,
  - (f) have a clearance of at least 1 700 mm between the outside of the stall face and the face of an in-swinging washroom door and 1 400 mm between the outside of the stall face and any wall-mounted fixture or other obstruction, (See Appendix A.) and
  - (g) where a toilet paper dispenser is provided, provide a dispenser that is,
    - (i) wall mounted,
    - (ii) located below the grab bar,
    - (iii) in line with or not more than 300 mm in front of the seat, and
    - (iv) not less than 600 mm above the finished floor.
- (2) A water closet described in Clause (1)(c) shall be,
  - (a) located so that,
    - (i) the centre line of the water closet is not less than 460 mm and not more than 480 mm from one side wall, and
    - (ii) a clear transfer space at least 900 mm wide and 1 500 mm deep is provided on the other side of the water closet, or
  - (b) located so that a clear transfer space at least 900 mm wide and 1 500 mm deep is provided on each side of the water closet. (See Appendix A.)
- (3) Where a water closet is located in accordance with Clause (2)(a),
  - (a) a grab bar conforming to Sentences (5) and (7) shall be provided on the side wall referred to in Subclause (2)(a)(i),
  - (b) a fold-down grab bar may be provided and, if one is provided, it shall conform to Sentence (8) and be provided on the side of the water closet opposite the grab bar described in Clause (a), and
  - (c) a grab bar conforming to Sentences (6) and (7) shall be provided on the wall behind the water closet. (See Appendix A.)
- (4) Where a water closet is located in accordance with Clause (2)(b),
  - (a) a fold-down grab bar conforming to Sentence (8) shall be provided on each side of the water closet, and
  - (b) a grab bar conforming to Sentences (6) and (7) shall be provided on the wall behind the water closet. (See A-3.8.3.8.(3) in Appendix A.)

- R5** (5) A grab bar described in Clause (3)(a) shall,  
 (a) be continuous L-shaped with 750 mm long horizontal and vertical components, and  
 (b) be wall mounted with the horizontal component 750 mm above the finished floor and the vertical component 150 mm in front of the water closet.  
 (See A-3.8.3.8.(3) and A-3.8.3.8.(5) in Appendix A.)
- (6) A grab bar described in Clause (3)(c) or (4)(b) shall,  
 (a) be at least 600 mm in length, and  
 (b) be wall mounted horizontally from 840 mm to 920 mm above the finished floor and, where the water closet has a water tank, be wall mounted 150 mm above the tank.  
 (See A-3.8.3.8.(3) in Appendix A.)
- R5** (7) A grab bar described in Clause (3)(a) or (c) or (4)(b) shall,  
 (a) be installed to resist a load of at least 1.3 kN applied vertically or horizontally,  
 (b) be not less than 35 mm and not more than 40 mm in diameter,  
 (c) have a clearance of not less than 38 mm and not more than 50 mm from the wall to the inside surface of the grab bar, and  
 (d) have a slip-resistant surface.  
 (See A-3.8.3.8.(3) in Appendix A.)
- (8) A fold-down grab bar described in Clause (3)(b) or (4)(a) shall,  
 (a) be mounted on the wall behind the water closet,  
     (i) with the horizontal component 750 mm above the finished floor, and  
     (ii) not less than 390 mm and not more than 410 mm from the centre line of the water closet,  
 (b) not require a force of more than 22.2 N to pull it down,  
**R5** (c) be at least 750 mm in length,  
 (d) be installed to resist a load of at least 1.3 kN applied vertically or horizontally,  
 (e) be not less than 35 mm and not more than 40 mm in diameter, and  
 (f) have a slip-resistant surface.  
 (See A-3.8.3.8.(3) and A-3.8.3.8.(8) in Appendix A.)
- (9) A fold-down grab bar installed in accordance with Sentence (8) is permitted to encroach into,  
 (a) the clear turning space described in Clause (1)(a), or  
 (b) a clear transfer space described in Subclause (2)(a)(ii) or Clause (2)(b).  
 (See A-3.8.3.8.(3) in Appendix A.)
- (10) Where an ambulatory water closet stall is required by Sentence 3.8.2.3.(6), it shall,  
**R5** (a) be at least 1 500 mm in depth and be not less than 890 mm and not more than 940 mm in width,  
 (b) be equipped with a door that shall,  
     (i) be capable of being latched from the inside with a mechanism that is operable using a closed fist,  
     (ii) when the door is in an open position, have a clear opening of at least 810 mm,  
     (iii) swing outward, unless the minimum dimensions in Clause (a) are not located within the door swing,  
     (iv) be provided with spring-type or gravity hinges so that the door closes automatically,  
     (v) be provided with a door pull on both sides of the door, near the latch side of the door, located at a height not less than 900 mm and not more than 1 100 mm above the finished floor, and  
     (vi) be capable of having the latch required by Subclause (i) released from the outside in the case of an emergency,  
 (c) be equipped with a water closet conforming to Article 3.8.3.9. and located so that its centre line is centred between the partition walls,  
 (d) be equipped on each side of the water closet with grab bars conforming to Clause (3)(a), and  
 (e) be equipped with a coat hook conforming to Clause (1)(e).  
 (See Appendix A.)

**r4 3.8.3.9. Water Closets** (See Appendix A.)

- (1) A water closet described in Clause 3.8.3.8.(1)(c) or (10)(c) or 3.8.3.12.(1)(d) shall,
  - (a) be equipped with a seat located at not less than 430 mm and not more than 485 mm above the finished floor,
  - (b) be equipped with hand-operated flushing controls that are easily accessible to a wheelchair user or be automatically operable,
  - (c) be equipped with a back support where there is no seat lid or tank, and (See Appendix A.)
  - (d) not have a spring-activated seat.  
(See Appendix A.)
- (2) Hand-operated flushing controls required by Clause (1)(b) shall be operable using a closed fist and with a force of not more than 22.2 N.

**r4 3.8.3.10. Urinals**

- (1) Where more than one urinal is provided in a washroom described in Sentence 3.8.2.3.(3) or (4), at least one urinal shall be,
  - (a) wall mounted, with the rim located not more than 430 mm above the finished floor, or
  - (b) floor mounted, with the rim level with the finished floor.  
(See Appendix A.)
- (2) A urinal described in Sentence (1) shall have,
  - (a) no step in front,
  - (b) a vertically mounted grab bar installed on each side of the urinal that,
    - (i) is not less than 300 mm long,
    - (ii) has its centre line 1 000 mm above the finished floor,
    - (iii) is located not less than 380 mm and not more than 450 mm measured horizontally from the vertical centre line of the urinal, and
    - (iv) complies with Sentence 3.8.3.8.(7), and
  - (c) a minimum depth of 345 mm measured from the outer face of the urinal rim to the back of the fixture.
- (3) Where manual flush controls are provided for a urinal described in Sentence (1), the flush controls shall be,
  - (a) operable using a closed fist, and
  - (b) mounted no higher than 1 200 mm above the finished floor.
- (4) Where privacy screens are installed for a urinal described in Sentence (1), they shall,
  - (a) be mounted a minimum of 460 mm from the centre line of the urinal, and
  - (b) have a clearance of at least 50 mm from the grab bars required by Clause (2)(b).
- (5) Where more than one urinal is provided in a washroom described in Sentence 3.8.2.3.(6), at least one urinal conforming to Sentences (1) to (4) shall be provided in the washroom.

**r4 3.8.3.11. Lavatories** (See Appendix A.)

- (1) A washroom described in Sentence 3.8.2.3.(2), (3) or (4) shall be provided with a lavatory that shall,
  - (a) be located so that the distance between the centre line of the lavatory and the side wall is not less than 460 mm,
  - (b) be mounted so that the top of the lavatory is not more than 840 mm above the finished floor,
  - (c) have a clearance beneath the lavatory not less than,
    - (i) 920 mm wide,
    - (ii) 735 mm high at the front edge,
    - (iii) 685 mm high at a point 205 mm back from the front edge, and
    - (iv) 350 mm high from a point 300 mm back from the front edge to the wall,,  
(See Appendix A.)
  - (d) have insulated pipes where they would otherwise present a burn hazard or have water supply temperature limited to a maximum of 43°C, (See Appendix A.)

- (e) be equipped with faucets that have lever type handles without spring loading or operate automatically and that are located so that the distance from the centre line of the faucet to the edge of the basin or, where the basin is mounted in a vanity, to the front edge of the vanity, is not more than 485 mm,
  - (f) have a minimum 1 370 mm deep floor space to allow for a forward approach, of which a maximum of 500 mm can be located under the lavatory, (See Appendix A.)
  - (g) have a soap dispenser that is,
    - (i) located to be accessible to persons in wheelchairs,
    - (ii) located so that the dispensing height is not more than 1 200 mm above the finished floor,
    - (iii) located not more than 610 mm, measured horizontally, from the edge of the lavatory.
    - (iv) operable with one hand, and
  - (h) have a towel dispenser or other hand drying equipment that is,
    - (i) located to be accessible to persons in wheelchairs,
    - (ii) located so that the dispensing height is not more than 1 200 mm above the finished floor,
    - (iii) operable with one hand, and
    - (iv) located not more than 610 mm, measured horizontally, from the edge of the lavatory.
- (2) If mirrors are installed in a washroom described in Sentence 3.8.2.3.(2), (3) or (4), at least one mirror shall be,
- (a) installed above a lavatory required by Sentence (1), and
  - (b) mounted with its bottom edge not more than 1 000 mm above the finished floor or inclined to the vertical to be usable by a person in a wheelchair.
- (3) If dispensing or hand-operated washroom accessories, except those located in water closet stalls or described in Clause (1)(g), are provided, they shall be mounted so that,
- (a) the dispensing height is not less than 900 mm and not more than 1 200 mm above the finished floor,
  - (b) the controls or operating mechanisms are mounted not less than 900 mm and not more than 1 200 mm above the finished floor, and
  - (c) a minimum 1 370 mm deep floor space is provided in front of the controls or operating mechanisms to allow for a front approach.
- (4) Where a shelf is installed above a lavatory required by Sentence (1), it shall,
- (a) be located not more than 200 mm above the top of the lavatory and not more than 1 100 mm above the finished floor, and
  - (b) project not more than 100 mm from the wall.
- (5) A washroom described in Sentence 3.8.2.3.(6) shall be provided with a lavatory conforming to Clauses (1)(e), (g) and (h).

#### r<sub>4</sub> 3.8.3.12. Universal Washrooms

- (1) A universal washroom room shall,
  - (a) be served by a *barrier-free* path of travel,
  - (b) have a door that is capable of being locked from the inside and released from the outside in case of emergency and that has,
    - (i) a graspable latch-operating mechanism located not less than 900 mm and not more than 1 000 mm above the finished floor,
    - r<sub>5</sub> (ii) if it is an outward swinging door, a door pull not less than 140 mm long located on the inside so that its midpoint is not less than 200 mm and not more than 300 mm from the latch side of the door and not less than 900 mm and not more than 1 100 mm above the finished floor, and
    - (iii) if it is an outward swinging door, a door closer, spring hinges or gravity hinges, so that the door closes automatically,
  - (c) have one lavatory conforming to Sentences 3.8.3.11.(1), (3) and (4),
  - (d) have one water closet conforming to Article 3.8.3.9. that is located in accordance with Clause 3.8.3.8.(2)(a) or (b), (See Appendix A.)



- (e) have grab bars conforming to,
- (i) Sentence 3.8.3.8.(3), if the water closet is located in accordance with Clause 3.8.3.8.(2)(a), or
  - (ii) Sentence 3.8.3.8.(4), if the water closet is located in accordance with Clause 3.8.3.8.(2)(b),
- r<sub>5</sub> (f) have no internal dimension between walls that is less than 1 700 mm,
- (g) have a coat hook that conforms to Clause 3.8.3.8.(1)(e) and a shelf that is located not more than 1 100 mm above the finished floor and projects not more than 100 mm from the wall,
- (h) be designed to permit a wheelchair to turn in an open space not less than 1 700 mm in diameter,
- (i) be provided with a door equipped with a power door operator if the door is equipped with a self-closing device,
- (j) be provided with a mirror,
- (i) installed above a lavatory described in Clause (1)(c), and
  - (ii) mounted with its bottom edge not more than 1 000 mm above the finished floor or inclined to the vertical to be usable by a person in a wheelchair, and
- (k) have lighting controlled by a motion sensor conforming to Sentence 12.2.4.1.(2).  
(See Appendix A.)
- (2) A universal washroom shall have,
- (a) an emergency call system that consists of audible and visual signal devices inside and outside of the washroom that are activated by a control device inside the washroom, and
  - (b) an emergency sign that contains the words **IN THE EVENT OF AN EMERGENCY PUSH EMERGENCY BUTTON AND AUDIBLE AND VISUAL SIGNAL WILL ACTIVATE** in letters at least 25 mm high with a 5 mm stroke and that is posted above the emergency button.
- (See Appendix A.)
- (3) A clear space not less than 810 mm wide and 1 830 mm long shall be provided in each universal washroom for an adult-size change table. (See Appendix A.)
- (4) Where the clear space provided for an adult-size change table is adjacent to a wall, reinforcement shall be installed in the wall to permit the future installation of the change table.
- (5) Where an adult-size change table is installed, it shall,
- (a) when fully loaded, have a surface height above the finished floor that can be adjusted from between 450 mm and 500 mm at the low range to between 850 mm and 900 mm at the high range,
  - (b) be designed to carry a minimum load of 1.33 kN,
  - (c) have a clear floor space parallel to the long side of the table not less than 760 mm wide and 1 500 mm long, and
  - (d) in the case of a fold-down table,
    - (i) be installed so that it does not encroach into a clear transfer space described in Clause 3.8.3.8.(2)(a) or (b), and
    - (ii) have no operating mechanisms higher than 1 200 mm.
- (6) A universal washroom need not conform to Sentences (3) and (4) if,
- (a) it is located in an individual *suite* that,
    - (i) is used for an *assembly occupancy*, a *business and personal services occupancy*, a *mercantile occupancy* or an *industrial occupancy*, and
    - r<sub>5</sub> (ii) meets one of the following requirements,
      - (A) it is located in a *building* that is less than 300 m<sup>2</sup> in *building area*, or
      - (B) it is less than 300 m<sup>2</sup> in area, if located in a *building* that is at least 300 m<sup>2</sup> in *building area*, or
  - (b) another universal washroom conforming to this Article is provided on the same floor level within 45 m.
- (See Appendix A.)

#### r<sub>4</sub> **3.8.3.13. Showers and Bathtubs**

- (1) Except within a *suite of residential occupancy*, if showers are provided in a *building*, the number of *barrier-free* showers shall conform to Table 3.8.3.13. (See Appendix A.)

Table 3.8.3.13.  
Minimum Number of Barrier-Free Showers  
Forming Part of Sentence 3.8.3.13.(1)

Number of Showers Provided in a Group	Minimum Number of Showers Required to be <i>Barrier-Free</i>
1	0
2 to 7	1
Over 7	1, plus 1 for each additional increment of 7 showers in a group
Column 1	2

- (2) A *barrier-free* shower required by Sentence (1) shall,
- (a) be not less than 1 500 mm wide and 900 mm deep,
  - (b) have a clear floor space at the entrance to the shower not less than 900 mm deep and the same width as the shower, except that fixtures are permitted to project into that space provided they do not restrict access to the shower, (See Appendix A.)
  - (c) have a slip-resistant floor surface,
  - (d) have a threshold that is level with the adjacent finished floor or a bevelled threshold not more than 13 mm higher than the adjacent finished floor,
  - (e) have a hinged seat that is not spring-loaded or a fixed seat that shall be,
    - (i) not less than 450 mm wide and 400 mm deep,
    - (ii) mounted not less than 430 mm and not more than 485 mm above the finished floor,
    - (iii) designed to carry a minimum load of 1.3 kN,
    - (iv) located so that the edge of the seat is within 500 mm of the shower controls,
 (See Appendix A.)
- R5** (f) have a wall mounted continuous L-shaped grab bar conforming to Sentence 3.8.3.8.(7) located on the same wall as the controls, with the horizontal component of the grab bar,
- (i) mounted not more than 850 mm above the finished floor, and
  - (ii) located so that the end of the horizontal component is within 100 mm from the edge of the shower seat,
- (See Appendix A.)
- (g) have a pressure-equalizing or thermostatic mixing valve controlled by a lever or other device operable using a closed fist from the seated position,
  - (h) have a hand-held shower head with not less than 1 500 mm of flexible hose located so that it can be reached from the seated position and equipped with a support so that it can operate as a fixed shower head, and
  - (i) have fully recessed soap holders that can be reached from the seated position.
- (3) Individual showers that are provided for use by patients or residents in *buildings* of Group B, Division 2 or 3 *occupancy* shall conform to Sentence (2).
- (4) Individual bathtubs that are provided for the use of patients or residents in *buildings* of Group B, Division 2 or 3 *occupancy* shall have,
- (a) faucets that have lever type handles without spring loading or that operate automatically,
  - (b) faucet handles that are located so as to be usable by a person seated in the bathtub,
  - (c) unless the bathtub is free-standing, a continuous L-shaped grab bar conforming to Sentence 3.8.3.8.(7) with 900 mm long horizontal and vertical components mounted with,
    - (i) the horizontal component located not less than 150 mm and not more than 200 mm above and parallel to the rim of the bathtub, and
    - (ii) the vertical component located not less than 300 mm and not more than 450 mm from the control end of the bathtub, and

- (d) unless the bathtub is free-standing, a grab bar conforming to Sentence 3.8.3.8.(7) that is located at each end of the bathtub and is,
- r<sub>5</sub>
- (i) at least 750 mm long,
  - (ii) mounted vertically from a point 200 mm above the rim of the bathtub, and
  - (iii) mounted within 150 mm from the edge of the bathtub, measured horizontally.
- (See Appendix A.)

(5) Where a *barrier-free* bathtub is provided, a clear floor space at least 900 mm wide and 1 440 mm long shall be provided along the full length of the bathtub.

### 3.8.3.14. Reserved

r<sub>4</sub> **3.8.3.15. Shelves or Counters for Telephones** (See Appendix A.)

(1) Where more than one telephone is provided for public use, a built-in shelf or counter shall be provided for at least one telephone.

(2) A shelf or counter described in Sentence (1) shall,

- (a) be level,
- (b) be not less than 500 mm wide and 350 mm deep, and
- (c) have, for each telephone provided, a clear space that,
  - (i) is not less than 810 mm wide and 1 370 mm deep, centred on the telephone, and
  - (ii) has no obstruction within 250 mm above the surface.

(3) The top surface of a section of the shelf or counter described in Sentence (1) shall,

- (a) be located not less than 775 mm and not more than 875 mm from the finished floor, and
- (b) have a knee space not less than 740 mm high.

(4) Where a wall-hung telephone is provided above the shelf or counter section described in Sentence (3), it shall be located so that the receiver and coin or card slot are not more than 1 200 mm from the finished floor.

(5) Where more than one telephone is provided for public use in a normally occupied *floor area* that is not required by Article 3.8.2.1. to have a *barrier-free* path of travel, a built-in shelf or counter that conforms to Sentences (2), (3) and (4) shall be provided for at least one telephone.

r<sub>4</sub> **3.8.3.16. Drinking Fountains** (See Appendix A.)

(1) Where more than one drinking fountain is provided, at least one shall be a *barrier-free* fountain that conforms to Sentences (2) and (3).

(2) A *barrier-free* drinking fountain shall,

- (a) have a spout located near the front of the unit not more than 915 mm above the finished floor,
- (b) be equipped with controls that are easily operated from a wheelchair using one hand with a force of not more than 22 N or operates automatically,
- (c) project the water at least 100 mm high,
- (d) provide the water stream at a vertical angle of up to,
  - (i) 30°, where the spout is located less than 75 mm from the front of the fountain, or
  - (ii) 15°, where the spout is located not less than 75 mm and not more than 125 mm from the front of the fountain,
- (e) be detectable by a cane at a level at or below 680 mm from the finished floor, and

- r<sub>5</sub> (f) where the drinking fountain is cantilevered, meet the following requirements:
- (i) be mounted not more than 915 mm above the finished floor,
  - (ii) provide a clearance height under the fountain of not less than 735 mm above the finished floor,
  - (iii) have a clear depth under the fountain of not less than 450 mm,
  - (iv) have a clear width under the fountain of not less than 760 mm,
  - (v) have a toe clearance height under the fountain of at least 350 mm above the finished floor from a point 300 mm back from the front edge to the wall, and
  - (vi) have a depth at the base of the fountain of at least 700 mm.

(3) A *barrier-free* drinking fountain required by Sentence (1) shall have a clear floor space in front of, or adjacent to, the fountain that is a minimum of 810 mm deep and 1 370 mm wide.

(4) Where more than one drinking fountain is provided in a normally occupied *floor area* that is not required by Article 3.8.2.1. to have a *barrier-free* path of travel, at least one shall be a *barrier-free* fountain that conforms to Sentences (2) and (3).

#### r<sub>4</sub> 3.8.3.17. Platforms

- (1) A tactile attention indicator conforming to Article 3.8.3.18. shall be installed along any edge of a platform that is,
  - (a) not protected by a *guard*, and
  - (b) higher than 250 mm above the finished floor or ground or sloped steeper than 1 in 3.
- (2) Sentence (1) does not apply to the front edges of *stages*.

#### r<sub>4</sub> 3.8.3.18. Tactile Attention Indicators

- r<sub>5</sub> (1) Where a tactile attention indicator is required, it shall conform to Sentence (2) and Clauses 4.1.1. and 4.1.2. of ISO 23599, “Assistive Products for Blind and Vision-Impaired Persons – Tactile Walking Surface Indicators”.
- r<sub>5</sub> (2) The depth of the tactile attention indicator shall be not less than 300 mm and not more than 610 mm.

- (4) Fuel-fired *appliances* with sealed combustion located in a portable classroom are not required to be separated from the remainder of the classroom,
  - (a) if there are not more than four portable classrooms in a group, and
  - (b) if the *appliance* is located not less than 4.5 m from an egress doorway or an *exit* from the portable classroom.

### **3.9.3.8. Washroom Facilities**

- (1) Washroom facilities need not be provided in a portable classroom where the facilities in the main school *building* comply with the requirements of Subsection 3.7.4. for the total *occupant load* of the main school *building* and the portable classrooms.

### **3.9.3.9. Barrier-Free Access**

- (1) The requirements of Section 3.8. for *barrier-free* access need not be provided for a portable classroom provided that the main school *building* complies with the requirements of Section 3.8.

## **Section 3.10. Self-Service Storage Buildings**

### **3.10.1. Scope**

#### **3.10.1.1. Application**

- (1) Except as provided in this Section, the requirements in this Division apply to *self-service storage buildings*.

### **3.10.2. Requirements for All Buildings**

#### **3.10.2.1. Occupancy Classification**

- (1) A *self-service storage building*,
  - (a) shall comply with the requirements for a Group F, Division 2 *major occupancy*, and
  - (b) shall not contain a Group F, Division 1 *occupancy*.

#### **3.10.2.2. Occupant Load**

- (1) The requirements based on *occupant load* shall not apply.

#### **3.10.2.3. Structural Fire Protection**

- (1) Except as provided in Sentence (2) and Sentence 3.10.4.2.(1), the requirements in Subsections 3.2.1. and 3.2.2. shall apply.
- (2) The *first storey* shall be subdivided into areas not more than 500 m<sup>2</sup> by a masonry or reinforced concrete *fire separation* having a *fire-resistance rating* not less than 1 h, or it shall be *sprinklered*.

#### **3.10.2.4. Safety Requirements Within Floor Areas**

- (1) Except as provided in Sentences (2) to (12), the requirements in Section 3.3. shall apply.

- (2) A corridor need not be constructed as a *public corridor* where the travel distance, measured from inside the rental space to the nearest *exit*, is not more than 15 m provided that the corridor walls,
  - (a) are of *noncombustible construction*,
  - (b) have no openings other than doors and the doors are of solid construction, and
  - (c) are continuous from the floor to the underside of the floor above, the ceiling or the roof.
- (3) Where the *building* is *sprinklered*, doors in a *public corridor* do not require to be equipped with self-closing devices and latches provided that the travel distance is measured from inside the rental space to the nearest *exit*.
- (4) Egress doors from a rental space are not required to swing in the direction of *exit* travel or swing on a vertical axis provided,
  - (a) the area of the rental space is not more than 50 m<sup>2</sup>, and
  - (b) the distance of travel within the rental space is not more than 10 m.
- (5) Where egress doors from a rental space open onto a corridor and swing in the direction of *exit* travel, the corridor shall be not less than 1 500 mm wide, and the doors shall be not more than 914 mm wide.
- (6) Where egress doors from a rental space open onto a corridor and do not swing in the direction of *exit* travel, the corridor shall be not less than 1 100 mm in width.
- (7) Dead end corridors are not permitted.
- (8) Corridors shall be provided with,
  - (a) natural lighting that shall be uniformly distributed and be at least 4% of the corridor area, or
  - (b) emergency lighting, conforming to Sentences 3.2.7.4.(1) and (2), that shall provide average levels of illumination not less than 10 lx at floor level.
- (9) Not more than two *dwelling units* shall be contained within one of the *buildings* on the property.
- r5 (10) Except as provided in Sentence (11), *dwelling units* shall be separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* not less than 2 h.
- (11) A *fire separation* is not required between a *dwelling unit* and an office where the office is not more than 50 m<sup>2</sup> in area.
- (12) The *fire separations* required in Sentence 3.3.1.1.(1) need not be provided between individual rental spaces.

### 3.10.2.5. Exit Requirements

- (1) Except as provided in Sentences (2) and (3), the requirements in Section 3.4. shall apply.
- (2) The clear width of an *exit* stair shall be not less than 1 100 mm.
- (3) *Exit* doors from rental spaces are not required to swing on a vertical axis provided,
  - (a) the area of the rental space is not more than 50 m<sup>2</sup>, and
  - (b) the travel distance within the rental space is not more than 10 m.

### 3.10.2.6. Service Facilities

- (1) Except as provided in Sentence (2), the requirements in Section 3.6. shall apply.
- (2) Except where located in and serving only the *dwelling units*, a fuel-fired *appliance* shall be located in a *service room* separated from the remainder of the *building* by a *fire separation* having a *fire-resistance rating* not less than 1 h.

## 3.11.4. Public Pools Equipped with Diving Boards or Diving Platforms

### 3.11.4.1. Diving Boards or Platforms

- (1) No *diving board* or *diving platform* shall be installed in a *public pool* unless the requirements of Sentences (5) to (17) are met but the requirements for a *diving platform* do not apply to a *starting platform*.
- (2) No *diving board* or *diving platform* shall be installed in a *modified pool* or a *wave action pool*.
- (3) Where a *public pool* is equipped with a *diving board* or a *diving platform*, the board or platform shall have a non-slip surface.
- (4) Where a *diving board* or a *diving platform* in a *public pool* is more than 600 mm above the water surface, the board or platform shall be equipped with one or more adjacent handrails.
- (5) Where a *public pool* is equipped with a *diving board* or a *diving platform* not more than 3 m in height above the water surface, the pool shall be designed and constructed in conformance with Sentences (6) to (15).
- (6) The depth of water in the area directly below a horizontal semi-circle in front of a *diving board* or *diving platform* having a radius of 3 m measured from any point on the front end of the board or platform shall not be less than,
  - (a) 2 750 mm, where a board is 600 mm or less in height above the water surface,
  - (b) 3 m, where a board or platform is greater than 600 mm but not more than 1 000 mm in height above the water surface, and
  - (c) 3.65 m, where a board or platform is greater than 1 000 mm but not more than 3 m in height above the water surface.
- (7) Except as permitted in Sentence (8), the water depth in a *public pool* shall be at least 1 350 mm at the horizontal arc having a radius of 9 m measured from any point on the front end of the *diving board* or *diving platform* and intersecting the vertical projections of the walls of the pool.
- (8) Where a Class B pool is equipped with a *diving board* 600 mm or less in height above the water,
  - (a) the water depth shall be at least 1 350 mm at the horizontal arc having a radius of 7.5 m measured from any point on the front end of the *diving board*, and
  - (b) a warning notice, on which is printed in letters at least 150 mm high, the words **DANGER — AVOID DEEP OR LONG DIVES**, shall be posted in a location clearly visible to divers.
- (9) The slope of the bottom of a *public pool* having a *diving board* or *diving platform* shall not change by more than 17% where the water depth is less than the applicable depth set out in Sentence (6) and greater than the depth set out in Sentence (7) or (8), as applicable.
- (10) The horizontal distance between the vertical projection of the centre line of a *diving board* or *diving platform* and the vertical projection of the centre line of another board or platform shall be at least 2 750 mm.
- (11) The horizontal distance between the centre line of a *diving board* or *diving platform* and the vertical projection of the closest side or any ledge on the closest side of a *public pool* shall be at least,
  - (a) 3 m, where a *diving board* or *diving platform* is 1 000 mm or less in height above the water surface, and
  - (b) 3.6 m, where a *diving board* or *diving platform* is greater than 1 000 mm in height above the water surface.
- (12) A *diving board* or a *diving platform* 600 mm or less in height above the water surface shall project over the water a horizontal distance of at least 900 mm from the vertical projection of a pool wall under it.
- (13) A *diving board* greater than 600 mm in height above the water surface shall project over the water a horizontal distance of at least 1 500 mm from the vertical projection of the pool wall under it.

(14) A *diving platform* greater than 600 mm in height above the water surface shall project a horizontal distance of at least 1 200 mm from the vertical projection of the pool wall under it.

- (15) The space above a *diving board* or *diving platform* shall be unobstructed and shall consist of at least,
- (a) a space having a width of 2 500 mm on each side of the centre line of the board or platform, a length equal to the sum of the horizontal distance the board or platform projects over the water plus 3 m, and a height of,
    - (i) 3.65 m above a *diving board* 3.65 m or less in length,
    - (ii) 5 m above a *diving board* greater than 3.65 m in length, or
    - (iii) 3 m above a *diving platform*, and
  - (b) the space below the planes originating from the front and sides of the uppermost horizontal plane of the space determined under Clause (a) and sloping downwards at 30° from the horizontal.

(16) A *diving board* or *diving platform* greater in height than 3 m above the water surface shall be equipped with a gate, barrier or other device capable of preventing access to the *diving board* or *diving platform*.

(17) Where a *public pool* is to be equipped with *diving boards* or *diving platforms* greater than 3 m in height above the water surface, the design of the *diving boards* or *diving platforms* and the corresponding water depths and clearances shall be in accordance with FINA, “Rules and Regulations - FINA Facilities Rules 2009-2013 - FR5 Diving Facilities”.

## **3.11.5. Ramps into Public Pools**

### **3.11.5.1. Ramps into Public Pools**

(1) Where *barrier-free* access for entry into and egress from the water of a *public pool* is provided by a ramp as required by Clause 3.11.3.3.(1)(a), the pool shall be designed and constructed in accordance with Sentences (2) to (4).

- (2) A ramp shall have,
- (a) along each side a handrail that,
    - (i) has a height of not less than 865 mm and not more than 965 mm, and
    - (ii) runs parallel to the slope of the ramp,
  - (b) a width of at least 1 100 mm,
  - (c) a curb or other means to prevent a wheelchair from falling off the side of the ramp,
  - (d) surface finishes capable of being kept clean, sanitary and free from slipperiness, and
  - (e) a landing at the bottom at least 1 500 mm in length and the same width as the ramp.

(3) Where a ramp that is not submerged is adjacent to the pool wall and is used for access to the water, the pool shall be constructed so that,

- (a) the landing at the bottom of the ramp is at least 450 mm but not more than 550 mm below the top of the wall separating the ramp from the pool,
- (b) the landing is equipped with a floor drain at its lowest point,
- (c) the top of the wall between the pool and the ramp is at least 250 mm and not more than 300 mm in width,
- (d) the *pool deck* is capable of accommodating a movable barrier separating the deck from the ramp,
- (e) the water depth at the landing is accurately and clearly marked at the landing in figures at least 100 mm high on the top of the wall separating the pool from the ramp, and
- (f) the ramp has a slope not exceeding 1 in 12.

(4) Where a submerged ramp is adjacent to the pool wall and is used for access to the water, the pool shall be constructed so that,

- (a) the water depth at the bottom of the ramp is at least 600 mm and not greater than 900 mm,
- e<sub>3</sub> (b) a hard-surfaced area that is at least 750 mm wide is contiguous to the entire length of the part of the submerged ramp that pierces any part of the deck, (See Appendix A.)
- (c) the area described in Clause (b) is capable of accommodating a movable barrier separating the area from the deck,
- (d) the finishes in submerged portions of the ramps and curbs are different in colour or shade from each other and from that of the pool walls and bottom, and
- (e) the submerged ramp has a slope not exceeding 1 in 9.



- (5) In addition to the requirements in Sentence (4), hose stations shall be located in each tunnel not more than 20 m from the end of the platform.
- (6) The requirement for hose rack and fire hose in Sentence 3.2.9.4.(2) does not apply in a *rapid transit station*.
- (7) Each hose station shall have a 38 mm hose connection and a 65 mm hose connection.
- (8) All supply piping shall have a diameter not less than 100 mm.

### 3.13.6. Required Sanitary Facilities

#### 3.13.6.1. Application

- (1) Except as provided in this Subsection, Subsection 3.7.4. applies to a *rapid transit station*.

#### 3.13.6.2. Washrooms Required

- (1) Except as provided in Sentences (2) and (3), a washroom for each sex, containing at least one water closet and one lavatory, shall be provided in each *rapid transit station* for use by employees.
- (2) Where the number of employees in a *rapid transit station* is not more than five, a washroom containing one water closet and one lavatory is permitted to be used by both sexes provided the door to the room can be locked from the inside.
- (3) Where a *rapid transit station* is not staffed during operating hours, a washroom is not required in the station.
- (4) In each *rapid transit station* located at the end of a line, a washroom for each sex, containing no fewer than three water closets and two lavatories, shall be provided for use by the public.

### 3.13.7. Emergency Ventilation

#### 3.13.7.1. Application

- r<sub>5</sub> (1) Every *rapid transit station* shall be provided with an emergency ventilation system conforming to NFPA 130, "Fixed Guideway Transit and Passenger Rail Systems".

### 3.13.8. Barrier-Free Design

#### r<sub>4</sub> 3.13.8.1. Application

- (1) Except as provided in this Subsection, the requirements in Section 3.8. apply to *rapid transit stations*.
- (2) A *rapid transit station* need not be provided with more than one *barrier-free* entrance described in Article 3.8.1.2.
- (3) At least one *barrier-free* path of travel shall be provided from a *barrier-free* entrance,
  - (a) into the *fare-paid area*, and
  - (b) to each platform.

#### 3.13.8.2. Exception

- (1) Where an elevator is used to comply with the requirements of Article 3.3.1.7., the provisions of Clause 3.3.1.7.(1)(a) do not apply where the elevator system complies with Article 3.13.8.3.

### 3.13.8.3. Elevator Requirements

- r<sub>4</sub> (1) Except as provided in Sentence (2), the elevator described in Article 3.13.8.2. shall be capable of providing transportation from each platform to a *barrier-free* entrance described in Article 3.8.1.2.
- (2) Where it is necessary to change elevators to reach the entrance described in Sentence (1), the elevator system shall be designed so that not more than one change of elevator is required between,
- (a) a platform and a *fare-paid area control*, and
  - (b) the *fare-paid area control* and the entrance.

### 3.13.8.4. Emergency Operation of Elevators

- (1) Manual emergency recall operation shall be provided for all elevators.
- (2) Key-operated switches for emergency recall described in Sentence (1) shall be provided and shall be located on the outside of each elevator shaft at the level of the *fare-paid area control*.
- (3) In-car emergency service switches shall be provided in all elevator cars.
- (4) Keys to operate the switches required in Sentences (2) and (3) shall be located at,
  - (a) the annunciator required in Clause 3.13.5.5.(1)(a), and
  - (b) the collector's booth designated in Clause 3.13.5.5.(1)(b).

### 3.13.8.5. Washrooms Required to be Barrier-Free

- (1) A *barrier-free* path of travel shall be provided to the washrooms required in Article 3.13.6.2.
- (2) Where a washroom required in Sentence 3.13.6.2.(1) contains only one water closet and one lavatory, the washroom shall be designed in conformance with the requirements in Article 3.8.3.12.
- (3) Where a washroom required in Sentence 3.13.6.2.(1) contains more than one water closet, the washroom shall be designed in conformance with the requirements in Articles 3.8.3.8. to 3.8.3.11.
- (4) The washroom required in Sentence 3.13.6.2.(2) shall be designed in conformance with the requirements in Article 3.8.3.12.
- (5) The washrooms required in Sentence 3.13.6.2.(4) shall be designed in conformance with the requirements in Articles 3.8.3.8. to 3.8.3.11.

## Section 3.14. Tents and Air-Supported Structures

(See Appendix A.)

### 3.14.1. Tents

#### 3.14.1.1. Application

- (1) Except as provided in this Subsection, tents are exempted from complying with the requirements of this Division.

- (e) inserts shall be sized to support loads specified in Part 4,
- (f) a clearly identified and easily accessible switch that will stop the conveyor shall be located at each at-level cross-over, and
- (g) stairs approaching at-level conveyor cross-overs shall be marked to indicate that they are readily identifiable as part of the egress route.

### **3.16.2. Storage of Class I, II, III and IV Commodities**

#### **3.16.2.1. Application**

- (1) The requirements in this Subsection apply to a *shelf and rack storage system* intended for the storage of Class I, II, III and IV commodities as defined in NFPA 13, “Installation of Sprinkler Systems”.

#### **3.16.2.2. Construction**

- (1) Where the height of a *shelf and rack storage system*, measured from the floor supporting the system to the topmost portion of the shelf, exceeds 18 m,
  - (a) a fire alarm and detection system conforming to Subsection 3.2.4. shall be installed with,
    - (i) pull stations located at all *exit* doors including *exit* doors serving elevated decks and walkways, and
    - (ii) *smoke detectors* located, at the ceiling of all rooms and areas containing the *shelf and rack storage system*, within *exit* stair enclosures at the top, and at every third level of elevated deck or walkway, and
  - (b) the fire alarm and detection system required by Clause (a), shall be designed to notify the fire department upon activation, and
  - (c) the *shelf and rack storage system* shall be designed only for the storage of Class I, II and III commodities as defined in NFPA 13, “Installation of Sprinkler Systems”.

### **3.16.3. Storage of Group A, B and C Plastics and Rubber Tires**

#### **3.16.3.1. Application**

- (1) The requirements in this Subsection apply to a *shelf and rack storage system* intended for the storage of Group A, B and C plastics and rubber tires as defined in NFPA 13, “Installation of Sprinkler Systems”.

#### **3.16.3.2. Construction**

- (1) A *shelf and rack storage system* intended for the storage of rubber tires shall conform to,
  - (a) Article 3.3.6.5., and
  - (b) the Fire Code made under the *Fire Protection and Prevention Act, 1997*.
- (2) Platform and walkway levels shall not be of open construction.
- (3) A *shelf and rack storage system* shall not exceed 7 m in height.

## r<sub>5</sub> Section 3.17. Additional Requirements for Existing Buildings

### 3.17.1. Scope

#### 3.17.1.1. Application

- r<sub>5</sub> (1) This Section applies where proposed *construction*,
- (a) in respect of an existing *building* will result in any of the following changes of use of all or part of the *building*:
- (i) a change of the *major occupancy* of all or part of a *building* that is designated with a “Y” in Table 1.3.1.4. of Division C,
  - (ii) a *suite* of a Group C *major occupancy* is converted into more than one *suite* of a Group C *major occupancy*,
  - (iii) a *suite* or part of a *suite* of a Group A, Division 2 or a Group A, Division 4 *major occupancy* is converted to a *gaming premises*,
  - (iv) a *farm building* or part of a *farm building* is changed to a *major occupancy*,
  - (v) a *building* or part of a *building* is changed to a *post-disaster building*,
  - (vi) a *building* or part of a *building* is changed to a retirement home regulated under the *Retirement Homes Act, 2010*, or
  - (vii) the use of a *building* or part of a *building* is changed and the previous *major occupancy* of the *building* or part of the *building* cannot be determined, or
- (b) in respect of an existing *building* of *combustible construction* will extend the *building* by adding a *storey* or *storeys* such that the extended *building* will be more than four *storeys* in *building height*.
- r<sub>5</sub> (2) For the purposes of this Section and Sentences 11.4.2.1.(1) and 11.4.2.5.(4), the changes of use set out in Subclauses (1)(a)(ii) to (iv) and (vi) shall also be deemed to constitute a change in *major occupancy*.
- (3) The requirements of this Section are in addition to the requirements of other Parts of this Division as they apply to the proposed *construction*.

### 3.17.2. Additional Construction

#### 3.17.2.1. Change of Use and Compensating Construction

- r<sub>5</sub> (1) Where proposed *construction* will result in a change of use described in Subclauses 3.17.1.1.(1)(a)(i) to (iv) and (vi), additional *construction* shall be required in order that the *building* or part of a *building* subject to the change of use conforms to the requirements of Subsection 3.2.6. and Sections 3.7., 3.11. and 3.12. as they apply to the new *major occupancy* that the *building* or part of a *building* is to support.
- (2) For the purposes of this Article, existing *buildings* shall be classified as to their *construction* and *occupancy* as provided for in Sentence 11.2.1.1.(1).

#### 3.17.2.2. Performance Level and Compensating Construction

- (1) The *performance level* of a *building* after *construction* shall not be less than the *performance level* of the *building* prior to *construction*.
- r<sub>5</sub> (2) For the purposes of Sentence (1), reduction of *performance level* shall be determined in accordance with Articles 11.4.2.1., 11.4.2.3., 11.4.2.5. and 11.4.2.6.
- r<sub>5</sub> (3) Where proposed *construction* would reduce the *performance level* of an existing *building*, compensating *construction* shall be required in conformance with Articles 11.4.3.1., 11.4.3.2., 11.4.3.4., 11.4.3.6. and 11.4.3.7.
- (4) Section 11.5. applies in respect of the requirements of Sentences 11.4.3.4.(1), (3) and (4).

Table 4.1.8.9. (Cont'd)  
SFRS Ductility-Related Force Modification Factors,  $R_d$ ,  
Overstrength-Related Force Modification Factors,  $R_o$ , and General Restrictions<sup>(1)</sup>  
Forming Part of Sentence 4.1.8.9.(1)

Type of SFRS	$R_d$	$R_o$	Restrictions <sup>(2)</sup>				
			Cases Where $I_E F_a S_a(0.2)$				Cases Where $I_E F_v S_a(1.0)$
			< 0.2	$\geq 0.2$ to < 0.35	$\geq 0.35$ to $\leq 0.75$	> 0.75	> 0.3
Timber Structures Designed and Detailed According to CSA O86 (Cont'd)							
Braced or moment-resisting frames with ductile connections							
Moderately ductile	2.0	1.5	NL	NL	20	20	20
Limited ductility	1.5	1.5	NL	NL	15	15	15
Other wood- or gypsum-based SFRS(s) not listed above	1.0	1.0	15	15	NP	NP	NP
Masonry Structures Designed and Detailed According to CSA S304.1							
Moderately ductile shear walls	2.0	1.5	NL	NL	60	40	40
Limited ductility shear walls	1.5	1.5	NL	NL	40	30	30
Conventional construction							
Shear walls	1.5	1.5	NL	60	30	15	15
Moment-resisting frames	1.5	1.5	NL	30	NP	NP	NP
Unreinforced masonry	1.0	1.0	30	15	NP	NP	NP
Other masonry SFRS(s) not listed above	1.0	1.0	15	NP	NP	NP	NP
Cold-Formed Steel Structures Designed and Detailed According to CAN/CSA-S136							
Shear walls							
Screw-connected shear walls - wood-based panel	2.5	1.7	20	20	20	20	20
Screw-connected shear walls - wood-based and gypsum panels in combination	1.5	1.7	20	20	20	20	20
Diagonal strap concentrically braced walls							
Limited ductility	1.9	1.3	20	20	20	20	20
Conventional construction	1.2	1.3	15	15	NP	NP	NP
Other cold-formed SFRS(s) not listed above	1.0	1.0	15	15	NP	NP	NP
Column 1	2	3	4	5	6	7	8

**Notes to Table 4.1.8.9.:**

- (1) See Article 4.1.8.10.
- (2) NP = system is not permitted.  
NL = system is permitted and not limited in height as an SFRS; height may be limited in other Parts of the Code.  
Numbers in Columns 4 to 8 are maximum height limits in m.  
The most stringent requirement governs.
- (3) Higher design force levels are prescribed in CSA S16 for some heights of *buildings*.

**4.1.8.10. Additional System Restrictions**

- (1) Except as required by Clause (2)(b), structures with a Type 6 irregularity, Discontinuity in Capacity – Weak Storey, as described in Table 4.1.8.6., are not permitted unless  $I_E F_a S_a(0.2)$  is less than 0.2 and the forces used for design of the SFRS are multiplied by  $R_d R_o$ .

- (2) *Post-disaster buildings* shall,
- not have any irregularities conforming to Types 1, 3, 4, 5 and 7 as described in Table 4.1.8.6., in cases where  $I_E F_a S_a(0.2)$  is equal to or greater than 0.35,
  - not have a Type 6 irregularity as described in Table 4.1.8.6.,
  - have an SFRS with an  $R_d$  of 2.0 or greater, and
  - have no *storey* with a lateral stiffness that is less than that of the *storey* above it.
- r<sub>5</sub> (3) For *buildings* having fundamental lateral periods,  $T_a$ , of 1.0 s or greater, and where  $I_E F_v S_a(1.0)$  is greater than 0.25, shear walls that are other than wood-based and form part of the SFRS shall be continuous from their top to the *foundation* and shall not have irregularities of Type 4 or 5 as described in Table 4.1.8.6.
- r<sub>5</sub> (4) For *buildings* constructed with more than 4 *storeys* of continuous wood construction and where  $I_E F_a S_a(0.2)$  is equal to or greater than 0.35, timber SFRS of shear walls with wood-based panels, braced frames or moment-resisting frames as defined in Table 4.1.8.9. within the continuous wood construction shall not have irregularities of Type 4 or 5 as described in Table 4.1.8.6.

#### 4.1.8.11. Equivalent Static Force Procedure for Structures Satisfying the Conditions of Article 4.1.8.7.

- The static loading due to earthquake motion shall be determined according to the procedures given in this Article.
- The minimum lateral earthquake force,  $V$ , shall be calculated using the formula,

$$V = S (T_a) M_v I_E W / (R_d R_o)$$

except,

- for walls, coupled walls and wall-frame systems,  $V$  shall not be less than,

$$S (4.0) M_v I_E W / (R_d R_o)$$

- for moment-resisting frames, braced frames and other systems,  $V$  shall not be less than,

$$S (2.0) M_v I_E W / (R_d R_o)$$

- for *buildings* located on a site other than Class F and having an SFRS with an  $R_d$  equal to or greater than 1.5,  $V$  need not be greater than,

$$^{2/3} S (0.2) I_E W / (R_d R_o)$$

- The fundamental lateral period,  $T_a$ , in the direction under consideration in Sentence (2) shall be determined as,
  - for moment-resisting frames that resist 100% of the required lateral forces and where the frame is not enclosed by or adjoined by more rigid elements that would tend to prevent the frame from resisting lateral forces, and where  $h_n$  is in metres,
    - $0.085 (h_n)^{3/4}$  for steel moment frames,
    - $0.075 (h_n)^{3/4}$  for concrete moment frames, or
    - 0.1 N for other moment frames,
  - $0.025 h_n$  for braced frames where  $h_n$  is in metres,
  - $0.05 (h_n)^{3/4}$  for shear wall and other structures where  $h_n$  is in metres, or
  - other established methods of mechanics using a structural model that complies with the requirements of Sentence 4.1.8.3.(8), except that,
    - for moment-resisting frames,  $T_a$  shall not be taken greater than 1.5 times that determined in Clause (a),
    - for braced frames,  $T_a$  shall not be taken greater than 2.0 times that determined in Clause (b),
    - for shear wall structures,  $T_a$  shall not be greater than 2.0 times that determined in Clause (c),
    - for other structures,  $T_a$  shall not be taken greater than that determined in Clause (c), and
    - for the purpose of calculating the deflections, the period without the upper limit specified in Subclauses (d)(i) to (iv) may be used, except that, for walls, coupled walls and wall-frame systems,  $T_a$  shall not exceed 4.0 s, and for moment-resisting frames, braced frames, and other systems,  $T_a$  shall not exceed 2.0 s.

(See Appendix A.)

(4) The weight,  $W$ , of the *building* shall be calculated using the formula,

$$W = \sum_{i=1}^n W_i$$

(5) The higher mode factor,  $M_v$ , and its associated base overturning moment reduction factor,  $J$ , shall conform to Table 4.1.8.11.

(6) The total lateral seismic force,  $V$ , shall be distributed such that a portion,  $F_t$ , shall be assumed to be concentrated at the top of the *building*, where  $F_t$  is equal to  $0.07 T_a V$  but need not exceed  $0.25 V$  and may be considered as zero, where the fundamental lateral period,  $T_a$ , does not exceed  $0.7$  s; the remainder,  $V - F_t$ , shall be distributed along the height of the *building*, including the top level, in accordance with the formula,

$$F_x = (V - F_t) W_x h_x / \left( \sum_{i=1}^n W_i h_i \right)$$

Table 4.1.8.11.  
Higher Mode Factor,  $M_v$ , and Base Overturning Reduction Factor,  $J^{(1)(2)}$   
Forming Part of Sentence 4.1.8.11.(5)

$S_a(0.2)/S_a(2.0)$	Type of Lateral Resisting System	$M_v$ for $T_a \leq 1.0$	$M_v$ For $T_a = 2.0$	$M_v$ For $T_a \geq 4.0$	J For $T_a \leq 0.5$	J For $T_a = 2.0$	J For $T_a \geq 4.0$
< 8.0	Moment-resisting frames	1.0	1.0	(3)	1.0	0.9	(3)
	Coupled walls <sup>(4)</sup>	1.0	1.0	1.0	1.0	0.9	0.8
	Braced frames	1.0	1.0	(3)	1.0	0.8	(3)
	Walls, wall-frame systems	1.0	1.2	1.6	1.0	0.6	0.5
	Other systems <sup>(5)</sup>	1.0	1.2	(3)	1.0	0.6	(3)
$\geq 8.0$	Moment-resisting frames	1.0	1.2	(3)	1.0	0.7	(3)
	Coupled walls <sup>(4)</sup>	1.0	1.2	1.2	1.0	0.7	0.6
	Braced frames	1.0	1.5	(3)	1.0	0.6	(3)
	Walls, wall-frame systems	1.0	2.2	3.0	1.0	0.4	0.3
	Other systems <sup>(5)</sup>	1.0	2.2	(3)	1.0	0.4	(3)
Column 1	2	3	4	5	6	7	8

**Notes to Table 4.1.8.11.:**

- (1) For values of  $M_v$  between fundamental lateral periods,  $T_a$ , of 1.0 s and 2.0 s and between 2.0 s and 4.0 s, the product  $S(T_a) \cdot M_v$  shall be obtained by linear interpolation.
- (2) Values of  $J$  between fundamental lateral periods,  $T_a$ , of 0.5 s and 2.0 s and between 2.0 s and 4.0 s shall be obtained by linear interpolation.
- (3) For fundamental lateral periods,  $T_a$ , greater than 2.0 s, use the values for  $T_a = 2.0$ .
- (4) A "coupled wall" is a wall system with coupling beams, where at least 66% of the base overturning moment resisted by the wall system is carried by the axial tension and compression forces resulting from shear in the coupling beams.
- (5) For hybrid systems, values corresponding to walls must be used or a dynamic analysis must be carried out as per Article 4.1.8.12.

(7) The structure shall be designed to resist overturning effects caused by the earthquake forces determined in Sentence (6) and the overturning moment at level  $x$ ,  $M_x$ , shall be determined using the formula,

$$M_x = J_x \sum_{i=x}^n F_i (h_i - h_x)$$

where,

$$J_x = 1.0 \text{ for } h_x \geq 0.6h_n, \text{ and}$$

$$J_x = J + (1 - J)(h_x / 0.6h_n) \text{ for } h_x < 0.6h_n$$

where,

$J$  = base overturning moment reduction factor conforming to Table 4.1.8.11.

(8) Torsional effects that are concurrent with the effects of the forces mentioned in Sentence (6) and are caused by the simultaneous actions of the following torsional moments shall be considered in the design of the structure according to Sentence (10):

- (a) torsional moments introduced by eccentricity between the centres of mass and resistance and their dynamic amplification, and
- (b) torsional moments due to accidental eccentricities.

(9) Torsional sensitivity shall be determined by calculating the ratio  $B_x$  for each level  $x$  according to the following equation for each orthogonal direction determined independently:

$$B_x = \delta_{\max} / \delta_{\text{ave}}$$

where,

$B$  = maximum of all values of  $B_x$  in both orthogonal directions, except that the  $B_x$  for one-storey penthouses with a weight less than 10% of the level below need not be considered,

$\delta_{\max}$  = maximum storey displacement at the extreme points of the structure, at level  $x$  in the direction of the earthquake induced by the equivalent static forces acting at distances  $\pm 0.10 D_{nx}$  from the centres of mass at each floor, and

$\delta_{\text{ave}}$  = average of the displacements at the extreme points of the structure at level  $x$  produced by the above-mentioned forces.

(10) Torsional effects shall be accounted for as follows:

- (a) for a *building* with  $B \leq 1.7$  or where  $I_E F_a S_a(0.2)$  is less than 0.35, by applying torsional moments about a vertical axis at each level throughout the *building*, derived for each of the following load cases considered separately,

- (i)  $T_x = F_x(e_x + 0.10 D_{nx})$ , and

- (ii)  $T_x = F_x(e_x - 0.10 D_{nx})$

where  $F_x$  is the lateral force at each level determined according to Sentence (6) and where each element of the *building* is designed for the most severe effect of the above load cases, or

- (b) for a *building* with  $B > 1.7$ , in cases where  $I_E F_a S_a(0.2)$  is equal to or greater than 0.35, by a Dynamic Analysis Procedure as specified in Article 4.1.8.12.

**r<sub>5</sub>** (11) Where the fundamental lateral period,  $T_a$ , is determined by Clause (3)(d) and the *building* is constructed with more than 4 storeys of continuous wood construction and having a timber SFRS of shear walls with wood-based panels, braced frames or moment-resisting frames as defined in Table 4.1.8.9., the lateral earthquake force,  $V$ , as determined by Sentence (2) shall be multiplied by 1.2, but need not exceed that determined by Clause (2)(c).



**4.1.8.12. Dynamic Analysis Procedure**

- (1) The Dynamic Analysis Procedure shall be in accordance with one of the following methods:
  - (a) Linear Dynamic Analysis by either the Modal Response Spectrum Method or the Numerical Integration Linear Time History Method using a structural model that complies with the requirements of Sentence 4.1.8.3.(8), or (See Appendix A)
  - (b) Nonlinear Dynamic Analysis, in which case a special study shall be performed. (See Appendix A.)
- (2) The spectral acceleration values used in the Modal Response Spectrum Method shall be the design spectral acceleration values,  $S(T)$ , defined in Sentence 4.1.8.4.(7).
- (3) The ground motion histories used in the Numerical Integration Linear Time History Method shall be compatible with a response spectrum constructed from the design spectral acceleration values,  $S(T)$ , defined in Sentence 4.1.8.4.(7). (See Appendix A.)
- (4) The effects of accidental torsional moments acting concurrently with the lateral earthquake forces that cause them shall be accounted for by the following methods:
  - (a) the static effects of torsional moments due to  $(\pm 0.10 D_{nx})F_x$  at each level  $x$ , where  $F_x$  is either determined from the elastic dynamic analysis or determined from Sentence 4.1.8.11.(6) multiplied by  $R_d R_o / I_E$ , shall be combined with the effects determined by dynamic analysis, or (See Appendix A.)
  - (b) if  $B$ , as defined in Sentence 4.1.8.11.(9), is less than 1.7, it is permitted to use a three-dimensional dynamic analysis with the centres of mass shifted by a distance of  $-0.05 D_{nx}$  and  $+0.05 D_{nx}$ .
- (5) Except as provided in Sentence (6), the design elastic base shear,  $V_{ed}$ , is equal to the elastic base shear,  $V_e$ , obtained from a Linear Dynamic Analysis.

(6) For structures located on sites other than Class F that have an SFRS with  $R_d$  equal to or greater than 1.5, the elastic base shear obtained from a Linear Dynamic Analysis may be multiplied by the following factor to obtain the design elastic base shear,  $V_{ed}$ :

$$\frac{2S(0.2)}{3S(T_a)} \leq 1.0$$

(7) The design elastic base shear,  $V_{ed}$ , shall be multiplied by the importance factor,  $I_E$ , as determined in Article 4.1.8.5., and shall be divided by  $R_d R_o$ , as determined in Article 4.1.8.9., to obtain the design base shear,  $V_d$ .

r5 (8) Except as required by Sentences (9) and (12), if the base shear,  $V_d$ , obtained in Sentence (7) is less than 80% of the lateral earthquake design force,  $V$ , of Article 4.1.8.11.,  $V_d$  shall be taken as 0.8  $V$ .

(9) For irregular structures requiring dynamic analysis in accordance with Article 4.1.8.7.,  $V_d$  shall be taken as the larger of the  $V_d$  determined in Sentence (7) and 100% of  $V$ .

(10) Except as required by Sentence (11), the values of elastic *storey* shears, *storey* forces, member forces, and deflections obtained from the Linear Dynamic Analysis, including the effect of accidental torsion determined in Sentence (4), shall be multiplied by  $V_d / V_e$  to determine their design values, where  $V_d$  is the base shear.

(11) For the purpose of calculating deflections, it is permitted to use a value for  $V$  based on the value for  $T_a$  determined in Clause 4.1.8.11.(3)(d) to obtain  $V_d$  in Sentences (8) and (9).

r5 (12) *Buildings* with more than 4 *storeys* of continuous wood construction and having a timber SFRS of shear walls with wood-based panels, braced frames or moment-resisting frames as defined in Table 4.1.8.9., having a fundamental lateral period,  $T_a$ , as determined in Clause 4.1.8.11.(3)(d), shall have the base shear,  $V_d$ , taken as the larger of the base shear obtained in Sentence (7) and 100% of the lateral earthquake design force,  $V$ , as determined in Article 4.1.8.11.

#### 4.1.8.13. Deflections and Drift Limits

- (1) Lateral deflections of a structure shall be calculated in accordance with the loads and requirements defined in this Subsection.
- (2) Lateral deflections obtained from a linear elastic analysis using the methods given in Articles 4.1.8.11. and 4.1.8.12. and incorporating the effects of torsion, including accidental torsional moments, shall be multiplied by  $R_d R_o / I_E$  to give realistic values of anticipated deflections.
- (3) Based on the lateral deflections calculated in Sentence (2), the largest interstorey deflection at any level shall be limited to  $0.01 h_s$  for *post-disaster buildings*,  $0.02 h_s$  for High Importance Category *buildings*, and  $0.025 h_s$  for all other *buildings*.
- (4) The deflections calculated in Sentence (2) shall be used to account for sway effects as required by Sentence 4.1.3.2.(12). (See Appendix A.)

#### 4.1.8.14. Structural Separation

- (1) Adjacent structures shall either be separated by the square root of the sum of the squares of their individual deflections calculated in Sentence 4.1.8.13.(2), or shall be connected to each other.
- (2) The method of connection required in Sentence (1) shall take into account the mass, stiffness, strength, ductility and anticipated motion of the connected *buildings* and the character of the connection.
- (3) Rigidly connected *buildings* shall be assumed to have the lowest  $R_d R_o$  value of the *buildings* connected.
- (4) *Buildings* with non-rigid or energy-dissipating connections require special studies.

#### 4.1.8.15. Design Provisions

- (1) Except as provided in Sentences (2) and (3), diaphragms, collectors, chords, struts and connections shall be designed so as not to yield, and the design shall account for the shape of the diaphragm, including openings, and for the forces generated in the diaphragm due to the following cases, whichever one governs:
  - (a) forces due to loads determined in Article 4.1.8.11. or 4.1.8.12. applied to the diaphragm are increased to reflect the lateral load capacity of the SFRS, plus forces in the diaphragm due to the transfer of forces between elements of the SFRS associated with the lateral load capacity of such elements and accounting for discontinuities and changes in stiffness in these elements, or
  - (b) a minimum force corresponding to the design-based shear divided by  $N$  for the diaphragm at level  $x$ . (See Appendix A.)
- (2) Steel deck roof diaphragms in *buildings* of less than 4 *storeys* or wood diaphragms that are designed and detailed according to the applicable referenced design standards to exhibit ductile behaviour shall meet the requirements of Sentence (1), except that they may yield and the forces shall be,
  - (a) for wood diaphragms acting in combination with vertical wood shear walls, equal to the lateral earthquake design force,
  - (b) for wood diaphragms acting in combination with other SFRS, not less than the force corresponding to  $R_d R_o = 2.0$ , and
  - (c) for steel deck roof diaphragms, not less than the force corresponding to  $R_d R_o = 2.0$ .
- (3) Where diaphragms are designed in accordance with Sentence (2), the struts shall be designed in accordance with Clause (1)(a) and the collectors, chords and connections between the diaphragms and the vertical elements of the SFRS shall be designed for forces corresponding to the capacity of the diaphragms in accordance with the applicable CSA standards. (See Appendix A.)

- (4) In cases where  $I_E F_a S_a(0.2)$  is equal to or greater than 0.35, the elements supporting any discontinuous wall, column or braced frame shall be designed for the lateral load capacity of the components of the SFRS they support. (See Appendix A.)
- (5) Where structures have vertical variations of  $R_d R_o$  satisfying Sentence 4.1.8.9.(4), the elements of the SFRS below the level where the change in  $R_d R_o$  occurs shall be designed for the forces associated with the lateral load capacity of the SFRS above that level. (See Appendix A.)
- (6) Where earthquake effects can produce forces in a column or wall due to lateral loading along both orthogonal axes, account shall be taken of the effects of potential concurrent yielding of other elements framing into the column or wall from all directions at the level under consideration and as appropriate at other levels. (See Appendix A.)
- (7) Except as provided in Sentence (8), the design forces associated with the lateral capacity of the SFRS need not exceed the forces determined in accordance with Sentence 4.1.8.7.(1) with  $R_d R_o$  taken as 1.0, unless otherwise provided by the applicable referenced design standards for elements, in which case the design forces associated with the lateral capacity of the SFRS need not exceed the forces determined in accordance with Sentence 4.1.8.7.(1) with  $R_d R_o$  taken as 1.3. (See Appendix A.)
- (8) If *foundation* rocking is accounted for, the design forces for the SFRS need not exceed the maximum values associated with *foundation* rocking, provided that  $R_d$  and  $R_o$  for the type of SFRS used conform to Table 4.1.8.9. and that the *foundation* is designed in accordance with Sentence 4.1.8.16.(1).

#### **4.1.8.16. Foundation Provisions**

- (1) *Foundations* shall be designed to resist the lateral load capacity of the SFRS, except that when the *foundations* are allowed to rock, the design forces for the *foundation* need not exceed those determined in Sentence 4.1.8.7.(1) using an  $R_d R_o$  equal to 2.0. (See Appendix A.)
- (2) The design of *foundations* shall be such that they are capable of transferring earthquake loads and effects between the *building* and the ground without exceeding the capacities of the *soil* and *rock*.
- (3) In cases where  $I_E F_a S_a(0.2)$  is equal to or greater than 0.35, the following requirements shall be satisfied:
- piles* or *pile caps*, drilled piers, and caissons shall be interconnected by continuous ties in no fewer than two directions, (See Appendix A.)
  - piles*, drilled piers, and caissons shall be embedded a minimum of 100 mm into the *pile cap* or structure, and
  - piles*, drilled piers, and caissons, other than wood *piles*, shall be connected to the *pile cap* or structure for a minimum tension force equal to 0.15 times the factored compression load on the *pile*.
- (4) At sites where  $I_E F_a S_a(0.2)$  is equal to or greater than 0.35, *basement* walls shall be designed to resist earthquake lateral pressures from backfill or natural ground. (See Appendix A.)
- (5) At sites where  $I_E F_a S_a(0.2)$  is greater than 0.75, the following requirements shall be satisfied:
- piles*, drilled piers, or caissons shall be designed and detailed to accommodate cyclic inelastic behaviour when the design moment in the element due to earthquake effects is greater than 75% of its moment capacity, and (See Appendix A.)
  - spread footings founded on *soil* defined as Site Class E or F shall be interconnected by continuous ties in no fewer than two directions.
- (6) Each segment of a tie between elements that is required by Clause (3)(a) or (5)(b) shall be designed to carry by tension or compression a horizontal force at least equal to the greatest factored *pile cap* or column vertical load in the elements it connects, multiplied by a factor of 0.10  $I_E F_a S_a(0.2)$ , unless it can be demonstrated that equivalent restraints can be provided by other means. (See Appendix A.)

(7) The potential for liquefaction of the *soil* and its consequences, such as significant ground displacement and loss of *soil* strength and stiffness, shall be evaluated based on the ground motion parameters referenced in Subsection 1.1.2. and shall be taken into account in the design of the structure and its *foundations*. (See Appendix A.)

#### 4.1.8.17. Site Stability (See Appendix A.)

(1) The potential for slope instability and its consequences, such as slope displacement, shall be evaluated based on site-specific material properties and ground motion parameters referenced in Subsection 1.1.2. and shall be taken into account in the design of the structure and its *foundations*.

#### 4.1.8.18. Elements of Structures, Non-Structural Components and Equipment

(See Appendix A.)

(1) Except as provided in Sentences (2) and (8), elements and components of *buildings* described in Table 4.1.8.18. and their connections to the structure shall be designed to accommodate the *building* deflections calculated in accordance with Article 4.1.8.13. and the element or component deflections calculated in accordance with Sentence (10), and shall be designed for a lateral force,  $V_p$ , applied through the centre of mass of the element or component that is equal to:

$$V_p = 0.3F_a S_a(0.2) I_E S_p W_p$$

where,

$F_a$  = as defined in Table 4.1.8.4.B.,

$S_a(0.2)$  = spectral response acceleration value at 0.2 s, as defined in Sentence 4.1.8.4.(1),

$I_E$  = importance factor for the *building*, as defined in Article 4.1.8.5.,

$S_p$  =  $C_p A_r A_x / R_p$  (the maximum value of  $S_p$  shall be taken as 4.0 and the minimum value of  $S_p$  shall be taken as 0.7), where,

$C_p$  = element or component factor from Table 4.1.8.18.,

$A_r$  = element or component force amplification factor from Table 4.1.8.18.,

$A_x$  = height factor  $(1 + 2 h_x / h_n)$ ,

$R_p$  = element or component response modification factor from Table 4.1.8.18., and

$W_p$  = weight of the component or element.

(2) For *buildings* other than *post-disaster buildings*, where  $I_E F_a S_a(0.2)$  is less than 0.35, the requirements of Sentence (1) need not apply to Categories 6 through 21 of Table 4.1.8.18.

(3) The values of  $C_p$  in Sentence (1) shall conform to Table 4.1.8.18.

(4) For the purpose of applying Sentence (1) and Categories 11 and 12 of Table 4.1.8.18., elements or components shall be assumed to be flexible or flexibly connected unless it can be shown that the fundamental period of the element or component and its connection is less than or equal to 0.06 s, in which case the element or component is classified as being rigid or rigidly connected.

(5) The weight of access floors shall include the *dead load* of the access floor and the weight of permanent equipment, which shall not be taken as less than 25% of the floor *live load*.

(6) When the mass of a tank plus its contents or the mass of a flexible or flexibly connected piece of machinery, fixture or equipment is greater than 10% of the mass of the supporting floor, the lateral forces shall be determined by rational analysis.

(7) Forces shall be applied in the horizontal direction that results in the most critical loading for design, except for Category 6 of Table 4.1.8.18., where the forces shall be applied up and down vertically.

#### 4.2.7.5. Installation of Deep Foundations

- (1) *Deep foundation units* shall be installed in such a manner as not to impair,
  - (a) the strength of the *deep foundation units* and the properties of the *soil* or *rock* on or in which they are placed beyond the calculated or anticipated limits,
  - (b) the integrity of previously installed *deep foundation units*, or
  - (c) the integrity of neighbouring *buildings*.

#### 4.2.7.6. Damaged Deep Foundation Units

- (1) Where inspection shows that a *deep foundation unit* is damaged or not consistent with design or good engineering practice,
  - (a) such a unit shall be reassessed by the *designer*, and
  - (b) any necessary changes shall be made and action taken as required.

### 4.2.8. Special Foundations

#### 4.2.8.1. General

- (1) Where special *foundation* systems are used, such systems shall conform to Subsection 4.2.4. and Sentence 4.1.1.4.(2).

#### 4.2.8.2. Use of Existing Foundations

- (1) Existing *foundations* may be used to support new or altered *buildings* provided they comply with all pertinent requirements of this Section.

## Section 4.3. Design Requirements for Structural Materials

### 4.3.1. Wood

#### 4.3.1.1. Design Basis for Wood

- (1) *Buildings* and their structural members made of wood shall conform to CSA O86, “Engineering Design in Wood”.

#### 4.3.1.2. Glue-Laminated Members

- (1) Glued-laminated members shall be fabricated in plants conforming to CSA O177, “Qualification Code for Manufacturers of Structural Glued-Laminated Timber”.

#### 4.3.1.3. Termites

- (1) In areas known to be infested by termites, the requirements in Articles 9.3.2.9., 9.12.1.1. and 9.15.5.1. shall apply.

## 4.3.2. Plain and Reinforced Masonry

### 4.3.2.1. Design Basis for Plain and Reinforced Masonry

(1) *Buildings* and their structural members made of plain and reinforced masonry shall conform to CSA S304.1, “Design of Masonry Structures”.

## 4.3.3. Plain, Reinforced and Prestressed Concrete

### 4.3.3.1. Design Basis for Plain, Reinforced and Prestressed Concrete

(1) *Buildings* and their structural members made of plain, reinforced or prestressed concrete shall conform to CAN/CSA-A23.3, “Design of Concrete Structures”. (See Appendix A.)

## 4.3.4. Steel

### 4.3.4.1. Design Basis for Structural Steel

(1) *Buildings* and their structural members made of structural steel shall conform to CSA S16, “Design of Steel Structures”. (See Appendix A.)

### 4.3.4.2. Design Basis for Cold Formed Steel

(1) *Buildings* and their structural members made of cold formed steel shall conform to CAN/CSA-S136, “North American Specification for the Design of Cold-Formed Steel Structural Members”. (See Appendix A.)

### 4.3.4.3. Steel Building Systems

r<sub>5</sub> (1) Steel *building* systems shall be manufactured by companies certified in accordance with the requirements of CSA A660, “Certification of Manufacturers of Steel Building Systems”. (See Appendix A.)

## 4.3.5. Aluminum

### 4.3.5.1. Design Basis for Aluminum

(1) *Buildings* and their structural members made of aluminum shall conform to CAN/CSA-S157 / S157.1, “Strength Design in Aluminum/Commentary on CSA S157-05, Strength Design in Aluminum”, using the loads stipulated in Section 4.1., in accordance with limit states design in Subsection 4.1.3.

## 4.3.6. Glass

### 4.3.6.1. Design Basis for Glass

(1) Glass used in *buildings* shall be designed in conformance with CAN/CGSB-12.20-M, “Structural Design of Glass for Buildings”.

- r<sub>5</sub> (3) Coatings applied to materials other than gypsum wallboard to provide required resistance to vapour diffusion shall conform to the requirements of Sentence (1) when tested in accordance with ASTM E96 / E96M, “Water Vapor Transmission of Materials” by the desiccant method (dry cup).

## Section 5.6. Precipitation

### 5.6.1. Protection from Precipitation

#### 5.6.1.1. Required Protection from Precipitation (See Appendix A.)

- (1) Except as provided in Sentence (2), where a *building* component or assembly is exposed to precipitation, the component or assembly shall,
- minimize ingress of precipitation into the component or assembly, and
  - prevent ingress of precipitation into interior space.
- (2) Protection from ingress of precipitation is not required where it can be shown that such ingress will not adversely affect any of,
- the health or safety of *building* users,
  - the intended use of the *building*, or
  - the operation of *building* services.

#### 5.6.1.2. Installation of Protective Materials

- (1) Where a material applied to a sloped or horizontal assembly is installed to provide required protection from precipitation and its installation is covered in the scope of one of the following standards, installation shall conform to the requirements of the respective standard:
- CAN/CGSB-37.51-M, “Application of Hot Applied Rubberized Asphalt for Roofing and Waterproofing”,
  - CGSB 37-GP-55M, “Application of Sheet Applied Flexible Polyvinyl Chloride Roofing Membrane”,
  - CAN3-A123.51-M, “Asphalt Shingle Application on Roof Slopes 1:3 and Steeper”, or
  - CAN3-A123.52-M, “Asphalt Shingle Application on Roof Slopes 1:6 to less than 1:3”.
- (2) Where masonry applied to vertical assemblies is installed to provide required protection from precipitation, installation shall conform to the requirements of CAN/CSA-A371, “Masonry Construction for Buildings”.
- (3) Where protective materials are applied to assemblies to provide the required protection from precipitation, the materials shall be installed so as to shed precipitation or otherwise minimize its entry into the assembly and prevent its penetration through the assembly. (See Appendix A.)

### 5.6.2. Sealing, Drainage, Accumulation and Disposal

#### 5.6.2.1. Sealing and Drainage (See Appendix A.)

- (1) Except as provided in Sentence (2), materials, components, assemblies, joints in materials, junctions between components and junctions between assemblies exposed to precipitation shall be,
- sealed to prevent ingress of precipitation, or
  - drained to direct precipitation to the exterior.
- (2) Sealing or drainage are not required where it can be shown that the omission of sealing and drainage will not adversely affect any of,
- the health or safety of *building* users,

- (b) the intended use of the *building*, or
- (c) the operation of *building* services.

### 5.6.2.2. Accumulation and Disposal

- (1) Where water, snow or ice can accumulate on a *building*, provision shall be made to minimize the likelihood of hazardous conditions arising from such accumulation.
- (2) Where precipitation can accumulate on sloped or horizontal assemblies, provision shall be made for drainage conforming with Section 7.4.
- (3) Where downspouts are provided and are not connected to a sewer, provisions shall be made to,
  - (a) divert the water from the *building*, and
  - (b) prevent *soil* erosion.
- (4) Junctions between vertical assemblies, and sloped or horizontal assemblies, shall be designed and constructed to minimize the flow of water from the sloped or horizontal assembly onto the vertical assembly.

### 5.6.2.3. Solar Collector Systems

- (1) A solar collector system is permitted to be installed above roofing materials conforming to Table 5.10.1.1.

## Section 5.7. Surface Water

### 5.7.1. Protection from Surface Water

#### 5.7.1.1. Prevention of Accumulation and Ingress

- (1) Except as provided in Sentence (3), the *building* shall be located, the *building* site shall be graded or catch basins shall be installed so that *surface water* will not accumulate against the *building*.
- (2) Except as provided in Sentence (3), the *foundation* walls shall be constructed so that *surface water* will not,
  - (a) enter the *building*, or
  - (b) damage moisture susceptible materials.
- (3) *Buildings* specifically designed to accommodate accumulation of water at the *building* or the ingress of water need not comply with Sentence (1) or Clause (2)(a).

## Section 5.8. Moisture in the Ground

### 5.8.1. Foundation and Floor Drainage

#### 5.8.1.1. Required Drainage

- (1) Except where a wall or floor is subject to continuous hydrostatic pressure, or unless it can be shown to be unnecessary, the bottom of every exterior *foundation* wall and every floor-on-ground shall be provided with drainage. (See Appendix A.)



**Table 5.10.1.1. (Cont'd)**  
**Standards Applicable to Environmental Separators and Assemblies Exposed to the Exterior**  
 Forming Part of Sentence 5.10.1.1.(1)

Issuing Agency	Document Number	Title of Document	
CGSB	CAN/CGSB-93.3-M	Prefinished Galvanized and Aluminum-Zinc Alloy Steel Sheet for Residential Use	
CGSB	CAN/CGSB-93.4	Galvanized Steel and Aluminum-Zinc Alloy Coated Steel Siding, Soffits and Fascia, Prefinished, Residential	
CSA	A23.1	Concrete Materials and Methods of Concrete Construction	
CSA	CAN/CSA-A82.1-M	Burned Clay Brick (Solid Masonry Units Made From Clay or Shale)	
CSA	A82.4-M	Structural Clay Load-Bearing Wall Tile	
CSA	A82.5-M	Structural Clay Non-Load-Bearing Tile	
CSA	CAN3-A82.8-M	Hollow Clay Brick	
CSA	CAN/CSA-A82.27-M	Gypsum Board	
CSA	A82.30-M	Interior Furring, Lathing and Gypsum Plastering	
CSA	A82.31-M	Gypsum Board Application	
CSA	CAN3-A93-M	Natural Airflow Ventilators for Buildings	
CSA	A123.1/123.5	Asphalt Shingles Made from Organic Felt and Surfaced with Mineral Granules / Asphalt Shingles Made from Glass Felt and Surfaced with Mineral Granules	
CSA	CAN/CSA-A123.2	Asphalt Coated Roofing Sheets	
CSA	A123.3	Asphalt Saturated Organic Roofing Felt	
CSA	CAN/CSA-A123.4	Asphalt for Constructing Built-Up Roof Coverings and Waterproofing Systems	
CSA	A123.17	Asphalt Glass Felt Used in Roofing and Waterproofing	
CSA	CAN3-A123.51-M	Asphalt Shingle Application on Roof Slopes 1:3 and Steeper	
CSA	CAN3-A123.52-M	Asphalt Shingle Application on Roof Slopes 1:6 to Less than 1:3	
CSA	CAN/CSA-A165.1	Concrete Block Masonry Units	
CSA	CAN/CSA-A165.2	Concrete Brick Masonry Units	
CSA	CAN/CSA-A165.3	Prefaced Concrete Masonry Units	
CSA	CAN3-A165.4-M	Autoclaved Cellular Units	
CSA	CAN/CSA-A179	Mortar and Grout for Unit Masonry	
CSA	CAN/CSA-A220.0	Performance of Concrete Roof Tiles	
CSA	CAN/CSA-A220.1	Installation of Concrete Roof Tiles	
CSA	CAN/CSA-A371	Masonry Construction for Buildings	
CSA	CAN/CSA-A3001	Cementitious Materials for Use in Concrete	
CSA	CAN/CSA-B182.1	Plastic Drain and Sewer Pipe and Pipe Fittings	
e <sub>1</sub>	CSA	G40.21	General Requirements for Rolled or Welded Structural Quality Steel
	CSA	CAN/CSA-G401	Corrugated Steel Pipe Products
	CSA	CAN/CSA-O80 Series	Wood Preservation
	CSA	O115-M	Hardwood and Decorative Plywood
	CSA	O118.1	Western Cedars Shakes and Shingles
	CSA	O118.2	Eastern White Cedar Shingles
	CSA	O121	Douglas Fir Plywood
	CSA	O141	Softwood Lumber
	CSA	O151	Canadian Softwood Plywood
	CSA	O153-M	Poplar Plywood
r <sub>5</sub>	CSA	O325	Construction Sheathing
	CSA	O437.0	OSB and Waferboard
	CSA	S478	Guideline on Durability in Buildings
Column 1	2	3	

Table 5.10.1.1. (Cont'd)  
Standards Applicable to Environmental Separators and Assemblies Exposed to the Exterior  
Forming Part of Sentence 5.10.1.1.(1)

Issuing Agency	Document Number	Title of Document
ULC	CAN/ULC-S701	Thermal Insulation, Polystyrene, Boards and Pipe Covering
ULC	CAN/ULC-S702	Mineral Fibre Thermal Insulation for Buildings
ULC	CAN/ULC-S703	Cellulose Fibre Insulation (CFI) for Buildings
ULC	CAN/ULC-S704	Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced
ULC	CAN/ULC-S705.1	Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density - Material - Specification
ULC	CAN/ULC-S705.2	Thermal Insulation - Spray Applied Rigid Polyurethane Foam, Medium Density, Installers's Responsibilities - Specification
ULC	CAN/ULC-S706	Wood Fibre Thermal Insulation for Buildings
Column 1	2	3

Notes to Table 5.10.1.1.:

(1) See Appendix A.

## 5.10.2. Windows, Doors and Skylights

### 5.10.2.1. General

- (1) This Subsection applies to windows, doors and skylights, including their components, that separate,
  - (a) interior space from exterior space, or
  - (b) environmentally dissimilar interior spaces.
- (2) For the purpose of this Subsection, the term “skylight” refers to unit skylights, roof windows and tubular daylighting devices.
- (3) Where a wired glass assembly is installed in a required *fire separation*, it need not conform to the requirements of this Subsection. (See Appendix A.)

### 5.10.2.2. Applicable Standards (See Appendix A.)

- (1) Windows, doors and skylights shall conform to the requirements in,
  - (a) AAMA/WDMA/CSA 101/I.S.2/A440, “NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights”, and
  - (b) CSA A440S1, “Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights”.
- (2) Performance grades for windows, doors and skylights shall be selected according to the Canadian Supplement referenced in Clause (1)(b) so as to be appropriate for the conditions and geographic location in which the window, door or skylight will be installed.
- (3) Windows, doors and skylights shall conform to the performance grades selected under Sentence (2) when tested in accordance with the standard referenced in Clause (1)(a).

### 5.10.2.3. Structural Loads, Air Leakage and Water Penetration

- (1) Windows, doors, skylights and their components shall be designed and constructed in accordance with,
  - (a) Article 5.10.2.2., where they are covered in the scope of the standards listed in Sentence 5.10.2.2.(1), or
  - (b) Article 5.1.4.1. and Sections 5.4. and 5.6., in other cases.

## Part 6

# Heating, Ventilating and Air-Conditioning

## Section 6.1. General (See Appendix A.)

### 6.1.1. Application

#### 6.1.1.1. Scope

- (1) The scope of this Part shall be as described in Subsection 1.1.2. of Division A.
- (2) Where the method of operation of an existing heating, ventilating or *air-conditioning* system is altered, the repair or component replacements that change the capacity or extent of safety of the system shall conform to this Code. (See Appendix A.)

#### 6.1.1.2. Application

- (1) This Part applies to systems and equipment for heating, ventilating and *air-conditioning* services.

## Section 6.2. Design and Installation

### 6.2.1. General

#### 6.2.1.1. Good Engineering Practice

- (1) Heating, ventilating and *air-conditioning* systems, including related mechanical refrigeration systems, shall be designed, constructed and installed to conform to good engineering practice appropriate to the circumstances such as described in,
  - (a) the ASHRAE Handbooks as follows:
    - (i) Fundamentals,
    - (ii) Refrigeration,
    - (iii) HVAC Applications,
    - (iv) HVAC Systems and Equipment, and
    - (v) ANSI/ASHRAE/IESNA 90.1, "Energy Standard for Buildings Except Low-Rise Residential Buildings",
  - r<sub>3.1</sub> (b) CSA F280, "Determining the Required Capacity of Residential Space Heating and Cooling Appliances", and the outside winter design temperatures shall conform to MMAH Supplementary Standard SB-1, "Climatic and Seismic Data",
  - r<sub>3</sub> (c) CAN/CSA-F326-M, "Residential Mechanical Ventilation Systems",
  - (d) the NFPA Fire Codes,
  - (e) the HRAI Digest,
  - (f) the Hydronics Institute Manuals,
  - (g) the SMACNA Manuals,
  - r<sub>3</sub> (h) ACGIH, "Industrial Ventilation Manual",

- (i) CAN/CSA-Z317.2, “Special Requirements for Heating, Ventilation, and Air Conditioning (HVAC) Systems in Health Care Facilities”,
- r<sub>3</sub> (j) CCBFC NRCC 38730, “Model National Energy Code of Canada for Buildings”,
- r<sub>3</sub> (k) CCBFC NRCC 54435, “National Energy Code of Canada for Buildings”, and
- (l) EPA/625/R-92/016, “Radon Prevention in the Design and Construction of Schools and Other Large Buildings”.

### 6.2.1.2. Design Indoor Air Temperatures

(1) *Buildings* classified as Group B, Division 2 or 3 *occupancies* or Group C *residential occupancies* that are intended for use in the winter months on a continuing basis shall be insulated and be equipped with heating facilities that are capable of maintaining an indoor air temperature of 22°C at the outside winter design temperature referred to in Article 6.2.1.7.

(2) All other *buildings* intended for occupancy in the winter months on a continuing basis should be insulated and shall be equipped with heating facilities to maintain a minimum indoor air temperature of 18°C or commensurate with the use of the *building* at the outside winter design temperature described in Article 6.2.1.7.

### 6.2.1.3. Structural Movement (See Appendix A.)

(1) Mechanical systems and equipment shall be designed and installed to accommodate the maximum relative structural movement provided for in the *construction* of the *building*.

### 6.2.1.4. Installation Standards

- r<sub>5</sub> (1) The installation of solid fuel-burning *appliances* for central heating systems shall comply with CSA B365, “Installation Code for Solid-Fuel-Burning Appliances and Equipment” and the manufacturer’s installation instructions.
- r<sub>5</sub> (2) The solid fuel-fired *appliances* in Sentence (1) shall conform to CSA B366.1, “Solid-Fuel-Fired Central Heating Appliances”.
- (3) The design and installation of earth energy systems shall conform to CAN/CSA-C448.2, “Design and Installation of Earth Energy Systems for Residential and Other Small Buildings”, where such systems use groundwater, submerged heat exchangers or ground heat exchangers to serve,
  - (a) single *dwelling units*, or
  - (b) *buildings* where the *conditioned space* is not more than 1 400 m<sup>2</sup>.
- (4) The design and installation of earth energy systems shall conform to CAN/CSA-C448.1, “Design and Installation of Earth Energy Systems for Commercial and Institutional Buildings”, where such systems use groundwater, submerged heat exchangers or ground heat exchangers to condition a floor space area more than 1 400 m<sup>2</sup>.
- r<sub>5</sub> (5) The design and installation of solid fuel-burning *stoves*, ranges and *space heaters*, including the requirements for combustion air, shall conform to the requirements of CSA B365, “Installation Code for Solid-Fuel-Burning Appliances and Equipment” and the manufacturer’s installation instructions.
- (6) The design and installation of hydronic heating systems shall conform to,
  - (a) CAN/CSA-B214, “Installation Code for Hydronic Heating Systems”, or
  - (b) good engineering practice appropriate to the circumstances such as described in Article 6.2.1.1.
- r<sub>3</sub> (7) Solid fuel-burning *stoves*, *furnaces* and hydronic heating systems designed to burn solid fuels, other than coal, shall conform to the particulate emission limits of,
  - (a) CSA B415.1, “Performance Testing of Solid-Fuel-Burning Heating Appliances”, or
  - (b) the “Standards of Performance for New Residential Wood Heaters”, set out in Subpart AAA of Part 60 of Title 40 of the Code of Federal Regulations, published by the United States Environmental Protection Agency, as it read on November 1, 2013.
 (See A-9.33.1.2.(2) in Appendix A.)

- (4) In *storage garages* subject to the requirements of Sentence (1), where motor vehicles are parked by mechanical means, the ventilation requirements may be reduced by one half.
- (5) Except as provided in Sentence (6), ticket and attendant booths of *storage garages* shall be pressurized with a supply of outdoor air.
- (6) The requirements of Sentences (1) to (5) shall not apply to *open-air storeys* in a *storage garage*.
- (7) A *repair garage* shall have a mechanical ventilation system designed to limit the exposure of workers to,
- (a) carbon monoxide to below the time weighted average concentration of 25 parts per million for a normal 8 hour workday or 40 hour work week, and
  - (b) nitrogen dioxide from diesel powered vehicles to below 0.72 parts per million for a normal 8 hour workday or 40 hour work week.
- (8) In a *repair garage*, when a repair bay is not immediately adjacent to an outside garage door opening, a system capable of providing continuous general ventilation of not less than 700 L/s per internal bay shall be provided.
- (9) The general ventilation system described in Sentence (8) shall be designed to,
- (a) operate continuously, or
  - (b) be controlled automatically by carbon monoxide monitoring devices, located so as to provide full protection throughout the *repair garage*.
- (10) The general ventilation system described in Sentence (8) is not required when tail pipes of vehicles are directly connected to local mechanical exhaust systems that terminate outdoors.

#### **6.2.2.4. Air Contaminants**

- (1) Air contaminants released within *buildings* shall be removed insofar as possible at their points of origin and shall not be permitted to accumulate in concentrations greater than permitted in the ACGIH, “Industrial Ventilation Manual”. (See Appendix A.)
- (2) Systems serving spaces that contain sources of contamination and systems serving other occupied parts of the *building* but located in or running through spaces that contain sources of contamination shall be designed in such a manner as to prevent spreading of such contamination to other occupied parts of the *building*. (See Appendix A.)
- (3) Heating, ventilating and *air-conditioning* systems shall be designed to minimize growth of micro-organisms according to good engineering practice as described in 6.2.1.1.(1). (See Appendix A.)
- (4) Mechanical rooms containing refrigeration equipment shall be ventilated in accordance with CSA-B52, “Mechanical Refrigeration Code”.

#### **6.2.2.5. Hazardous Gases, Dusts or Liquids**

- r5 (1) Except as provided in Subsection 6.2.13., systems serving spaces that contain hazardous gases, dusts or liquids shall be designed, constructed and installed in conformance with the provisions of the Fire Code made under the *Fire Protection and Prevention Act, 1997*, or in the absence of requirements pertinent to such systems in the Fire Code, to good engineering practice such as is described in the publications of the National Fire Protection Association and in the CCBFC NRCC 53303, “National Fire Code of Canada”. (See Appendix A.)
- (2) When indoor piping for Class I *flammable liquids* is installed in a trench, the trench shall be,
- (a) provided with positive ventilation to the outdoors, or
  - (b) designed to prevent the accumulation of flammable vapours.

### 6.2.2.6. Commercial Cooking Equipment

(1) All commercial cooking equipment shall be provided with ventilation systems designed, constructed and installed to conform to NFPA 96, “Ventilation Control and Fire Protection of Commercial Cooking Operations”, except as required by Sentence 3.6.3.1.(1) and Article 3.6.4.2.

(2) Fire protection systems for high efficiency, high temperature commercial cooking equipment using vegetable oil or animal fat shall conform to,

- rs (a) ANSI/UL 300, “Fire Extinguishing Systems for Protection of Commercial Cooking Equipment”, or  
 (b) ULC/ORD-C1254.6, “Fire Testing of Restaurant Cooking Area Fire Extinguishing System Units”.

### 6.2.2.7. Crawl Spaces and Attic or Roof Spaces

(1) Every crawl space and every *attic or roof space* shall be ventilated by natural or mechanical means. (See Appendix A.)

## 6.2.3. Air Duct Systems

### 6.2.3.1. Application

(1) Except as provided in Sentence (2), this Subsection applies to the design, construction and installation of air duct distribution systems serving heating, ventilating and *air-conditioning* systems.

(2) This Subsection does not apply to the design, construction and installation of air duct distribution systems serving heating, ventilating and *air-conditioning* systems that serve individual *dwelling units* within the scope of Part 9.

### 6.2.3.2. Materials in Air Duct Systems

(1) Except as provided in Sentences (2) to (4) and in Article 3.6.4.3., all ducts, duct connectors, associated fittings and *plenums* used in air duct systems shall be constructed of steel, aluminum alloy, copper, clay, asbestos-cement or similar *noncombustible* material.

(2) Ducts, associated fittings and *plenums* are permitted to contain *combustible* material provided they,

- (a) conform to the appropriate requirements for Class 1 duct materials in CAN/ULC-S110, “Test for Air Ducts”,
- (b) conform to Article 3.1.5.15. in a *building* required to be of *noncombustible construction*,
- (c) conform to Subsection 3.1.9.,
- (d) are used only in horizontal runs in a *building* required to be of *noncombustible construction*,
- (e) are not used in vertical runs serving more than 2 *storeys* in a *building* required to be of *noncombustible construction*, and
- (f) are not used in air duct systems in which the air temperature may exceed 120°C.

(3) Duct sealants shall have a *flame-spread rating* of not more than 25 and a smoke developed classification of not more than 50.

(4) Duct connectors that contain *combustible* materials and that are used between ducts and air outlet units shall,

- (a) conform to the appropriate requirements for Class 1 air duct materials in CAN/ULC-S110, “Test for Air Ducts”,
- (b) be limited to 4 m in length,
- (c) be used only in horizontal runs, and
- (d) not penetrate required *fire separations*.

(5) Materials in Sentences (1) to (4) installed in a location where they may be subjected to excessive moisture shall have no appreciable loss of strength when wet and shall be corrosion-resistant.

- (b) the *exhaust ducts* discharge to a shaft that is served by an exhaust fan having a capacity that is equal to or greater than the combined capacity of the exhaust fans discharging to the *plenum* multiplied by the operation diversity factor, provided that the exhaust fan serving the shaft operates continuously. (See Appendix A.)
- (11) Where *exhaust ducts* containing air from *conditioned spaces* pass through or are adjacent to unconditioned spaces, the ducts shall be constructed to prevent condensation from forming inside or outside of the ducts.
- (12) Where an *exhaust duct* system is used for smoke removal in a high *building*, the requirements of Article 3.2.6.6. shall apply.
- (13) Where *exhaust duct* systems from more than one *fire compartment* are connected to an *exhaust duct* in a *vertical service space*, the requirements of Article 3.6.3.4. shall apply.
- (14) Except as provided in Sentence (15), exhaust air shall be provided at a rate not less than 24 L/s for each water closet, urinal, shower or slop sink.
- (15) Except as provided in Sentence 6.2.2.1.(3), exhaust air shall be provided for *fixtures* in *dwelling units* in accordance with ANSI/ASHRAE 62.1, “Ventilation for Acceptable Indoor Air Quality”.
- (16) Except for wash basins (lavatories), sanitary facilities in a *food premises* shall be mechanically ventilated and shall be capable of exhausting air at the rate of not less than 24 L/s for each sanitary fixture listed in Sentence (17).
- (17) The mechanical ventilation described in Sentence (16) applies to rooms containing water closets, urinals, basins, showers or slop sinks.
- (18) Where collective venting of multiple installations of laundry-drying equipment is used, the ventilation system shall,
  - (a) be connected to a common *exhaust duct* that is vented by one central exhaust fan,
  - (b) incorporate one central lint trap,
  - (c) include an interlock to activate the central exhaust fan when laundry-drying equipment is in use, and
  - (d) be provided with make-up air.
- (19) *Exhaust ducts* or vents connected to laundry-drying equipment shall discharge directly to the outdoors.

### 6.2.3.9. Interconnection of Systems

- (1) In a *residential occupancy*, air from one *suite* shall not be circulated to any other *suite* or to a *public corridor* or public stairway.
- (2) Except as permitted by Sentence (3) and Sentence 6.2.3.8.(6), air duct systems serving *storage garages* shall not be directly interconnected with ductwork serving other areas of the *building*.
- (3) Where *exhaust ducts* are provided in conformance with Sentence 6.2.3.8.(6), they may exhaust through an enclosed *storage garage* prior to exhausting to the outdoors provided,
  - (a) the *storage garage* exhaust system runs continuously,
  - (b) the capacity of the *storage garage* exhaust system is equal to or exceeds the volume of the exhaust entering the garage, and
  - (c) a leakage rate 1 smoke/*fire damper* rated in accordance with CAN/ULC-S112.1, “Leakage Rated Dampers for Use in Smoke Control Systems”, is provided near the duct outlet location in the *storage garage* to prevent air from the *storage garage* from entering the exhaust ductwork system in the event the *building’s* exhaust fan is shut down.
- (4) Except for corridors conforming to Sentence 3.3.1.4.(4) or as permitted in Sentences (5) and (6), a *public corridor* or corridor serving the public shall not be used as a portion of a supply, return or exhaust air system serving adjoining areas, other than as part of a supply air system serving toilet rooms, bathrooms, shower rooms and similar auxiliary spaces opening directly to the *public corridor* or corridor used by the public.

- (5) A *public corridor* may be used as part of an engineered smoke control system.
- (6) Infiltration due to corridor pressurization is permitted into a *residential occupancy* from a *public corridor*.

### 6.2.3.10. Ducts in Exits

- (1) Except as permitted in Sentence (2), duct penetration of *fire separations* separating *exits* from the remainder of the *building* shall be in accordance with Article 3.4.4.4.
- (2) Duct penetration of *fire separations* separating *exits* from the remainder of the *building* is permitted if the duct,
  - (a) is designed for the purposes of Subsection 3.2.6., or
  - (b) only serves the *exit* from a dedicated roof top air make-up unit.

### 6.2.3.11. Make-up Air

- (1) In ventilating systems that exhaust air to the outdoors, provision shall be made for the admission of a supply of make-up air in sufficient quantity so that the operation of the exhaust system and other exhaust equipment or combustion equipment is not adversely affected.
- (2) Make-up air facilities required by Sentence (1) shall be interlocked with the exhaust devices they serve so that both operate together.
- (3) Where make-up air facilities are intended to introduce air directly from the outdoors to occupied parts of the *building* in winter, they shall incorporate means of tempering that air to maintain the indoor design temperature.

### 6.2.3.12. Supply, Return, Intake and Exhaust Air Openings (See Appendix A.)

- (1) Supply, return and exhaust air openings located less than 2 000 mm above the floor in rooms or spaces in *buildings* shall be protected by grilles having openings of a size that will not allow the passage of a 15 mm diameter sphere.
- (2) Outdoor air intakes and exhaust outlets on the exterior of *buildings* shall be designed or located so that the air entering the *building* system will not contain more contaminants than the normal exterior air of the locality in which the *building* is situated.
- (3) Exterior openings for outdoor air intakes and exhaust outlets shall be shielded from the entry of snow and rain and shall be fitted with corrosion-resistant screens of mesh having openings not larger than 15 mm, except where experience has shown that climatic conditions require larger openings to avoid icing over of the screen openings.
- (4) Screens required in Sentence (3) shall be accessible for maintenance.
- (5) *Combustible* grilles, diffusers and other devices for supply, return and exhaust air openings in rooms shall conform to the *flame-spread rating* and smoke developed classification requirements for the interior finish of the surface on which they are installed.

### 6.2.3.13. Filters and Odour Removal Equipment

- (1) Air filters for air duct systems shall conform to the requirements for Class 2 air filter units as described in ULC-S111, "Fire Tests For Air Filter Units".
- (2) When electrostatic-type filters are used, they shall be installed so as to ensure that the electric circuit is automatically de-energized when filter access doors are opened and, in *dwelling units*, when the system circulating fan is not operating.



# Part 7

## Plumbing

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(3) *Water service pipes* or *building sewers* serving *buildings* located on the same property may connect into a *private water supply* or a *private sewer* conforming to Article 7.1.5.5.

(4) No *plumbing* serving a *dwelling unit* shall be installed in or under another unit of the *building* unless the piping is located in a tunnel, pipe corridor, common *basement* or parking garage, so that the piping is *accessible* for servicing and maintenance throughout its length without encroachment on any private living space, but this Sentence does not prevent *plumbing* serving a unit located above another unit from being installed in or under the lower unit.

#### **7.1.5.5. Private Sewers and Private Water Supply**

(1) *Private water supply* pipes shall be designed and installed according to MOE PIBS 6881e, “Design Guidelines for Drinking-Water Systems”.

(2) *Private sewers* shall be designed and installed according to MOE PIBS 6879, “Design Guidelines for Sewage Works”.

#### **7.1.6. Location of Fixtures**

##### **7.1.6.1. Lighting and Ventilation Requirements**

(1) *Plumbing fixtures* shall not be installed in a room that is not lighted and ventilated in accordance with the appropriate requirements in Parts 3 and 9.

##### **7.1.6.2. Accessibility**

(1) Every *fixture*, *plumbing appliance*, *interceptor*, *cleanout*, valve, device or piece of equipment shall be so located that it is readily *accessible* for use, cleaning and maintenance.

#### **r<sub>5</sub> 7.1.7. Accommodating Movement**

##### **7.1.7.1. Structural Movement**

(1) *Plumbing* shall be designed and installed to accommodate the maximum relative structural movement provided for in the *construction* of the *building*.

## **Section 7.2. Materials and Equipment**

### **7.2.1. General**

#### **7.2.1.1. Exposure of Materials**

(1) Where unusual conditions exist such as excessively corrosive *soil* or water, only materials suited for use in such locations shall be used.

(2) Materials and equipment used in a *drainage system* where excessively corrosive wastes are present shall be suitable for the purpose.

### 7.2.1.2. Restrictions on Re-Use

- (1) Used materials and equipment, including *fixtures*, shall not be reused unless they meet the requirements of this Part for new materials and equipment and are otherwise satisfactory for their intended use.
- (2) Materials and equipment that have been used for a purpose other than the distribution of *potable* water shall not be subsequently used in a *potable water system*.

### 7.2.1.3. Identification and Certification

- (1) Every length of pipe and every fitting shall have cast, stamped or indelibly marked on it the maker's name or mark and the weight or class or quality of the product, or it shall be marked in accordance with the relevant standard, and such markings shall be visible after installation.
- (2) Where a component of a *plumbing system* is required by this Code to comply with a standard and the compliance is not certified by a testing agency accredited by the Standards Council of Canada for the testing of the component in question and, when an inspector requests proof of the compliance, proof of compliance shall be produced by the person proposing to install or have installed the component, and without such proof the component shall not be installed as a permanent part of any *plumbing system*.
- (3) The lack of certification markings on a product or *plumbing* component shall be regarded as proof, in the absence of evidence to the contrary, that no certification exists.
- (4) If a component of a *plumbing system* is required to be certified to a standard, the certification shall be made by a testing agency accredited for that purpose by the Standards Council of Canada.

### 7.2.1.4. Pipe or Piping

- (1) Where the term pipe or piping and fittings is used, it shall also apply to tube or tubing and fittings unless otherwise stated.

### 7.2.1.5. Withstanding Pressure

- (1) Piping, fittings and joints used in pressure sewer, forcemain or sump pump discharge applications shall be capable of withstanding at least one and one-half times the maximum potential pressure.

## 7.2.2. Fixtures

### 7.2.2.1. Surface Requirements

- (1) Except for the area designed to be slip proof in such *fixtures*, every exposed area of a *fixture* shall have a smooth, hard corrosion-resistant surface that is free from flaws and blemishes that may interfere with cleaning.

### 7.2.2.2. Conformance to Standards

- (1) Water closets and urinals shall conform to the requirements in Article 7.6.4.2.
- r<sub>5</sub> (2) Vitreous china fixtures shall conform to ASME A112.19.2 / CSA B45.1, "Ceramic Plumbing Fixtures".
- r<sub>5</sub> (3) Enamelled cast iron fixtures shall conform to ASME A112.19.1 / CSA B45.2, "Enamelled Cast Iron and Enamelled Steel Plumbing Fixtures".

- r<sub>5</sub> (4) Porcelain enamelled steel fixtures shall conform to ASME A112.19.1 / CSA B45.2, “Enamelled Cast Iron and Enamelled Steel Plumbing Fixtures”.
- r<sub>5</sub> (5) Stainless steel fixtures shall conform to ASME A112.19.3 / CSA B45.4, “Stainless Steel Plumbing Fixtures”.
- r<sub>5</sub> (6) Plastic fixtures shall conform to CSA B45.5 / IAPMO Z124, “Plastic Plumbing Fixtures”.
- r<sub>5</sub> (7) Hydromassage bathtubs shall conform to ASME A112.19.7 / CSA B45.10, “Hydromassage Bathtub Systems”.
- (8) Macerating toilet systems shall conform to CAN/CSA-B45.9, “Macerating Systems and Related Components”.

### **7.2.2.3. Showers**

- (1) Shower receptors shall be constructed and arranged so that water cannot leak through the walls or floor. (See Appendix A.)
- (2) Not more than six shower heads shall be served by a single shower drain.
- (3) Where two or more shower heads are served by a shower drain, the floor shall be sloped and the drain located so that water from one head cannot flow over the area that serves another head.
- (4) Except for column showers, when a battery of shower heads is installed, the horizontal distance between two adjacent shower heads shall be at least 750 mm.

### **7.2.2.4. Concealed Overflows**

- (1) A dishwashing sink and a food preparation sink shall not have concealed overflows.

### **7.2.2.5. Water Closets in Public Washrooms**

- (1) Except for Eastern-Style toilets, where a water closet is installed in a washroom for *public use* it shall be of the elongated type and provided with a seat of the open front type.

### **7.2.2.6. Lavatories**

- (1) A lavatory that does not have an overflow shall be equipped with a centre outlet waste fitting. (See Appendix A.)

### **7.2.2.7. Trough Urinals**

- (1) No trough urinal shall be used as part of a *plumbing system*.

## **7.2.3. Traps and Interceptors**

### **7.2.3.1. Traps**

- (1) Except as provided for in Sentence (2), every *trap* shall,
  - (a) have a *trap seal depth* of at least 38 mm,
  - (b) be so designed that failure of the seal walls will cause exterior leakage, and
  - (c) have a water seal that does not depend on the action of moving parts.
- (2) The *trap seal depth* on *fixtures* draining to an acid waste system shall be a minimum of 50 mm.

- (3) Except for a floor-mounted service sink, every *trap* that serves a lavatory, a sink or a laundry tray shall,
- (a) be provided with a *cleanout* plug of a minimum  $\frac{3}{4}$  in. *size* located at the lowest point of the *trap* and of the same material as the *trap*, except that a cast iron *trap* shall be provided with a brass *cleanout* plug,
  - (b) be designed so that the *trap dip* can be completely removed for cleaning purposes, or
  - (c) be provided with a *cleanout* installed above the floor as close as practical downstream of the *trap* when the *trap* is,
    - (i) installed below the floor, and
    - (ii) not readily *accessible* for cleaning as required by Clause (a).
- (See Appendix A.)
- (4) A bell *trap* or an S-*trap* shall not be installed in a *drainage system*.
- (5) A *drum trap* shall not be installed in a *drainage system*.
- (6) Except as permitted in Sentence (7), no *bottle trap* shall be used in a *plumbing system*.
- (7) A *bottle trap* may be used on a laboratory sink or other *fixture* equipped with corrosion resistant fittings.
- (8) No running *trap* shall be installed in a *plumbing system* unless an *accessible* handhole is provided for cleaning of the *trap*, and where the *trap* is too small to accommodate a handhole, a *cleanout* shall be provided.

### 7.2.3.2. Interceptors

- (1) Every *interceptor* shall be designed so that it can be readily cleaned.
- (2) Every grease *interceptor* shall be designed so that it does not become air bound.
- (3) Where a grease *interceptor* is required by Sentence 7.4.4.3.(1), the *interceptor* shall conform to,
  - (a) CSA B481.1, “Testing and Rating of Grease Interceptors Using Lard”, or
  - (b) CSA B481.2, “Testing and Rating of Grease Interceptors Using Oil”.

### 7.2.3.3. Tubular Traps

- (1) Tubular metal or plastic *traps* that conform to ASME A112.18.2 / CSA B125.2, “Plumbing Waste Fittings” shall be used in *accessible* locations.

## 7.2.4. Pipe Fittings

### 7.2.4.1. T and Cross Fittings

- (1) A T fitting shall not be used in a *drainage system* except to connect a *vent pipe*.
- (2) A cross fitting shall not be used in a *drainage system*.

### 7.2.4.2. Sanitary T Fittings

- (1) A double sanitary T fitting shall not be used to connect the *fixture drains* of two urinals where no *cleanout* fitting is provided above the connection.
- (2) No pipe fitting, joint or connection that would tend to intercept solids or reduce the flow through a pipe by more than 10 percent shall be used in a *plumbing system*.

**7.2.4.3. 90° Elbows**

- (1) Except as permitted in Sentences (2) and (3), 90° elbows of 4 in. *size* or less that have a centre-line radius that is less than the *size* of the pipe shall not be used to join two *soil* or *waste pipes*.
- (2) 90° elbows of 4 in. *size* or less in *sanitary drainage systems* may be used,
  - (a) to change the direction of piping from horizontal to vertical, in the direction of flow,
  - (b) where a *trap arm* enters a wall, or
  - (c) to connect *trap arms* as permitted by Sentence 7.5.6.3.(2).
- (3) A 90° elbow that is part of the pre-engineered wastewater heat recovery system is permitted to have a centre-line radius that is less than the *size* of the pipe.

**7.2.4.4. Fittings Restricted in Use**

- (1) No double Y, double TY, double T or double waste fitting shall be installed in a *nominally horizontal soil* or *waste pipe*.

**7.2.4.5. Assembled Pipe or Tubing**

- (1) Pipe or tubing assembled to comprise a standard drain waste and venting system shall be connected with drain, waste and vent fittings in conformance with Table 7.2.4.5.

Table 7.2.4.5.  
Pipe Arrangement for DWV Fittings  
Forming Part of Sentence 7.2.4.5.(1)

Pipe Arrangement	Fittings	
	Acceptable	Type
	①③⑤⑦	
	②④⑥⑧⑨	
	①③⑤⑦	
	③⑤⑦	
	④*⑥⑧⑨*	
	⑤⑦	
<p>LEGEND (DWV BRANCH FITTINGS) Vent pipe ----- Drainage pipe _____ * Acceptable only if vertical run is of 3 inches size or larger and horizontal branches are of 1 1/4, 1 1/2, or 2 inches size</p>		
<p>1. Straight T 2. Double T or Cross 3. Sanitary T or Short Turn TY 4. Double Sanitary T or Short Turn Double TY 5. Combination Y &amp; 1/8 Bend or Long Turn TY</p>	<p>6. Double Combination Y &amp; 1/8 Bend or Double Long Turn TY 7. Y 8. Double Y 9. Double Waste Fitting</p>	



## **7.2.5. Non-Metallic Pipe and Fittings**

### **7.2.5.1. Asbestos-Cement Drainage Pipe and Fittings**

- (1) Except as provided in Sentence (2), asbestos-cement pipe and its fittings for use in a drain, waste or vent system shall conform to,
  - (a) CAN/CGSB-34.22, “Asbestos-Cement Drain Pipe”, or
  - (b) CAN/CSA-B127.1, “Asbestos Cement Drain, Waste and Vent Fittings”.
- (2) Asbestos-cement pipe and fittings used underground either outside a *building* or under a *building* shall conform to Sentence (1) or to,
  - (a) CAN/CGSB-34.9, “Asbestos-Cement Sewer Pipe”,
  - (b) CAN/CGSB-34.23, “Asbestos-Cement House Connection Sewer Pipe”, or
  - (c) CSA B127.2, “Components for Use in Asbestos-Cement Building Sewer Systems”.

### **7.2.5.2. Reserved**

### **7.2.5.3. Concrete Pipe and Fittings**

- (1) Concrete pipe shall conform to CAN/CSA-A257 Series, “Standards for Concrete Pipe and Manhole Sections”.
- (2) Joints with external elastomeric gaskets shall be made with corrosion resistant external band type flexible mechanical couplings that conform to CAN/CSA-B602, “Mechanical Couplings for Drain, Waste, and Vent Pipe and Sewer Pipe”.
- (3) Concrete fittings field fabricated from lengths of pipe shall not be used. (See Appendix A.)
- (4) Concrete pipe shall not be used above ground inside a *building*.
- r<sub>5</sub> (5) Precast reinforced circular concrete manhole sections, catch basins and fittings shall conform to CAN/CSA-A257.4, “Precast Reinforced Circular Concrete Manhole Sections, Catch Basins, and Fittings”.

### **7.2.5.4. Vitrified Clay Pipe and Fittings**

- (1) Vitrified clay pipe and fittings shall be certified to CSA A60.1-M, “Vitrified Clay Pipe”.
- (2) Couplings and joints for vitrified clay pipe shall be certified to CSA A60.3-M, “Vitrified Clay Pipe Joints”.
- (3) Vitrified clay pipe and fittings shall not be used except for an underground part of a *drainage system*.

### **7.2.5.5. Polyethylene Pipe and Fittings**

- (1) Polyethylene water pipe, tubing and fittings shall be certified to, and have a pressure rating meeting the requirements of, Series 160 or a higher series of CAN/CSA-B137.1, “Polyethylene (PE) Pipe, Tubing and Fittings for Cold Water Pressure Services”.
- (2) Except as permitted in Sentence 7.2.5.7.(1), polyethylene water pipe shall not be used except for a *water service pipe*.
- (3) Butt fusion fittings for polyethylene pipe shall conform to ASTM D3261, “Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing”.

### 7.2.5.6. Polyethylene Pipe Used Underground

(1) Polyethylene pipe used underground in a *drainage system* for rehabilitation of existing systems using trenchless technology shall conform to ASTM F714, “Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter” and shall be HDPE 3408, SDR 17 or heavier. (See Appendix A.)

### 7.2.5.7. Crosslinked Polyethylene Pipe and Fittings

(1) Crosslinked polyethylene pipe and its associated fittings used in hot and cold *potable water systems* shall be certified to CAN/CSA-B137.5, “Crosslinked Polyethylene (PEX) Tubing Systems for Pressure Applications”. (See Appendix A.)

### 7.2.5.8. PVC Pipe and Fittings

r5 (1) PVC water pipe, fittings and solvent cement shall be certified to CAN/CSA-B137.3, “Rigid Polyvinylchloride (PVC) Pipe and Fittings for Pressure Applications” or CAN/CSA-B137.2, “Polyvinylchloride (PVC) Injection-Moulded Gasketed Fittings for Pressure Applications”, and have a minimum pressure rating of 1 100 kPa.

(2) PVC water pipe and fittings in Sentence (1) shall not be used in a hot *water system*.

### 7.2.5.9. CPVC Pipe, Fittings and Solvent Cements

(1) CPVC hot and cold water pipe, fittings and solvent cements shall be certified to CAN/CSA-B137.6, “Chlorinated Polyvinylchloride (CPVC) Pipe, Tubing and Fittings for Hot and Cold Water Distribution Systems”.

(2) The design temperature and design pressure of a CPVC piping system shall conform to CAN/CSA-B137.6, “Chlorinated Polyvinylchloride (CPVC) Pipe, Tubing and Fittings for Hot and Cold Water Distribution Systems”.

### 7.2.5.10. Plastic Pipe, Fittings and Solvent Cement Used Underground

(See Appendix A.)

(1) Plastic pipe, fittings and solvent cement used underground outside a *building* or under a *building* in a *drainage system* shall be certified to,

- (a) ASTM F628, “Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste and Vent Pipe With a Cellular Core”,
- (b) CAN/CSA-B181.1, “Acrylonitrile-Butadiene-Styrene (ABS) Drain, Waste, and Vent Pipe and Pipe Fittings”,
- (c) CAN/CSA-B181.2, “Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Drain, Waste, and Vent Pipe and Pipe Fittings”,
- (d) CAN/CSA-B182.1, “Plastic Drain and Sewer Pipe and Pipe Fittings”,
- (e) CAN/CSA-B182.2, “PSM Type Polyvinylchloride (PVC) Sewer Pipe and Fittings”,
- (f) CAN/CSA-B182.4, “Profile Polyvinylchloride (PVC) Sewer Pipe and Fittings”,
- (g) CAN/CSA-B182.6, “Profile Polyethylene (PE) Sewer Pipe and Fittings for Leak-Proof Sewer Applications”,
- (h) CAN/CSA-B137.2, “Polyvinylchloride (PVC) Injection-Moulded Gasketed Fittings for Pressure Applications”, or
- r5 (i) CAN/CSA-B137.3, “Rigid Polyvinylchloride (PVC) Pipe and Fittings for Pressure Applications”.

(2) Except as permitted in Clauses (h) and (i), plastic pipe used as described in Sentence (1) shall have a stiffness equal or greater than 320 kPa.

### 7.2.5.11. Transition Solvent Cement (See Appendix A.)

(1) Solvent cement for transition joints shall conform to,

- (a) CAN/CSA-B181.1, “Acrylonitrile-Butadiene-Styrene (ABS) Drain, Waste, and Vent Pipe and Pipe Fittings”, or
- (b) CAN/CSA-B181.2, “Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Drain, Waste, and Vent Pipe and Pipe Fittings”.

- (2) Transition solvent cement shall only be used for joining an ABS *plumbing system* to a PVC *plumbing system*.

### **7.2.5.12. Plastic Pipe, Fittings and Solvent Cement Used in Buildings** (See Appendix A.)

- (1) Plastic pipe, fittings and solvent cement used inside or under a *building* in a *sanitary drainage system* or *venting system* shall be certified to,
- (a) ASTM F628, “Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe With a Cellular Core”,
  - (b) CAN/CSA-B181.1, “Acrylonitrile-Butadiene-Styrene (ABS) Drain, Waste, and Vent Pipe and Pipe Fittings”, or
  - (c) CAN/CSA-B181.2, “Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Drain, Waste, and Vent Pipe and Pipe Fittings”.
- (2) Plastic pipe, fittings and solvent cement used inside a *building* in a *storm drainage system* shall be certified to,
- (a) ASTM F628, “Acrylonitrile-Butadiene-Styrene (ABS) Schedule 40 Plastic Drain, Waste, and Vent Pipe With a Cellular Core”,
  - (b) CAN/CSA-B181.1, “Acrylonitrile-Butadiene-Styrene (ABS) Drain, Waste, and Vent Pipe and Pipe Fittings”,
  - (c) CAN/CSA-B181.2, “Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Drain, Waste, and Vent Pipe and Pipe Fittings”,
  - (d) CAN/CSA-B182.1, “Plastic Drain and Sewer Pipe and Pipe Fittings”, or
  - (e) CAN/CSA-B182.2, “PSM Type Polyvinylchloride (PVC) Sewer Pipe and Fittings”.
- (3) Plastic pipe used as described in Sentence (2) shall have a pipe stiffness equal or greater than 320 kPa.
- (4) Requirements for *combustible* piping in relation to fire safety shall conform to Sentences 3.1.5.16.(1) and 9.10.9.6.(2) to (8) and Articles 3.1.9.4. and 9.10.9.7.
- (5) Where *noncombustible* piping pierces a *fire separation* or a *fire block*, the requirements for fire stopping of Subsection 3.1.9., Sentence 9.10.9.6.(1) and Article 9.10.16.4. shall apply.

### **7.2.5.13. Polyethylene/Aluminum/Polyethylene Composite Pipe and Fittings**

- (1) PE/AL/PE composite pipe and fittings used for *potable water systems* shall conform to CAN/CSA-B137.9, “Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure-Pipe Systems”. (See Appendix A.)
- (2) Except as provided in Sentences (3) and (4), PE/AL/PE pipe and fittings shall not be used in a *hot water system*.
- (3) PE/AL/PE pipe with a pressure rating of 690 kPa or greater at 82°C shall be permitted in a *hot water system*.
- (4) PE/AL/PE pipe with a pressure rating of 690 kPa or greater at 82°C shall be used with fittings that conform to CAN/CSA-B137.10, “Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Composite Pressure-Pipe Systems”, in a *hot water system*.

### **7.2.5.14. Crosslinked Polyethylene/Aluminum/Polyethylene Composite Pipe and Fittings**

- (1) PEX/AL/PEX composite pipe and fittings used for *potable water systems* shall conform to CAN/CSA-B137.10, “Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Composite Pressure-Pipe Systems”. (See Appendix A.)

### **7.2.5.15. Polypropylene Pipe and Fittings**

- (1) Polypropylene pipe and fittings used for hot and cold *potable water systems* shall conform to CAN/CSA-B137.11, “Polypropylene (PP-R) Pipe and Fittings for Pressure Applications”. (See Appendix A.)

## 7.2.6. Ferrous Pipe and Fittings

### 7.2.6.1. Cast Iron Drainage and Vent Pipe and Fittings

- r<sub>5</sub> (1) Drainage piping, vent piping and fittings made of cast iron shall be certified to CAN/CSA-B70, “Cast Iron Soil Pipe, Fittings and Means of Joining”.
- (2) Cast iron *soil pipe* and fittings shall not be used in a *water system*.

### 7.2.6.2. Cast Iron Fittings for Asbestos-Cement Drainage Pipe

- (1) Cast iron fittings designed for use with asbestos-cement pipe for drainage purposes shall conform to the applicable requirements of,
- (a) CAN/CSA-B127.1, “Asbestos Cement Drain, Waste and Vent Fittings”, or
- (b) CSA B127.2-M, “Components for Use in Asbestos Cement Building Sewer Systems”.

### 7.2.6.3. Threaded Cast Iron Drainage Fittings

- r<sub>5</sub> (1) Threaded cast iron drainage fittings shall conform to ASME B16.12, “Cast Iron Threaded Drainage Fittings”.
- (2) Threaded cast iron drainage fittings shall not be used in a *water system*.

### 7.2.6.4. Cast Iron Water Pipe

- r<sub>5</sub> (1) Cast iron water pipes shall conform to ANSI/AWWA C151/A21.51, “Ductile-Iron Pipe, Centrifugally Cast”.
- (2) Cement-mortar lining for cast iron water pipes shall conform to ANSI/AWWA C104 / A21.4, “Cement-Mortar Lining for Ductile-Iron Pipe and Fittings”.
- (3) Cast iron fittings for cast iron or ductile-iron water pipes shall conform to ANSI/AWWA C110 / A21.10, “Ductile-Iron and Gray-Iron Fittings”.
- (4) Rubber gasket joints for cast iron and ductile-iron pressure pipe for water piping shall conform to ANSI/AWWA C111 / A21.11, “Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings”.

### 7.2.6.5. Screwed Cast Iron Water Fittings

- r<sub>5</sub> (1) Screwed cast iron water fittings shall conform to ASME B16.4, “Gray Iron Threaded Fittings: Classes 125 and 250”.
- (2) Screwed cast iron water fittings used in a *water system* shall be cement-mortar lined or galvanized.
- (3) Screwed cast iron water fittings shall not be used in a *drainage system*.

### 7.2.6.6. Screwed Malleable Iron Water Fittings

- r<sub>5</sub> (1) Screwed malleable iron water fittings shall conform to ASME B16.3, “Malleable Iron Threaded Fittings: Classes 150 and 300”.
- (2) Screwed malleable iron water fittings used in a *water system* shall be cement-mortar lined or galvanized.
- (3) Screwed malleable iron water fittings shall not be used in a *drainage system*.

### 7.2.6.7. Steel Pipe

- (1) Except as provided in Sentences (2) and (3), welded and seamless steel pipe shall not be used in a *plumbing system*.
- (2) Galvanized steel pipe may be used in a *drainage system* or a *venting system* above ground inside a *building*.
- (3) Galvanized steel pipe and fittings shall not be used in a *water distribution system* except,
  - (a) in *buildings* of *industrial occupancy*, or
  - (b) for the repair of existing galvanized steel piping systems.
 (See Appendix A.)
- (4) Galvanized steel pipe and fittings shall conform to ASTM A53 / A53M, "Pipe, Steel, Black and Hot Dipped, Zinc-Coated Welded and Seamless".
- (5) Where galvanized steel pipe is used in a *drainage system*, it shall be used with drainage fittings.
- (6) All steel pipe of 4 in. *size* and smaller shall be schedule 40 or heavier and fittings of less than 2 in. *size* shall be galvanized screw fittings.

### 7.2.6.8. Corrugated Steel Pipe and Couplings

- (1) Corrugated steel pipe and couplings shall be certified to CAN/CSA-G401, "Corrugated Steel Pipe Products".
- (2) Corrugated steel pipe shall only be used underground outside a *building* in a *storm drainage system*.
- (3) Couplings for corrugated steel pipe shall be constructed so that when installed they shall,
  - (a) maintain the pipe alignment,
  - (b) resist the separation of adjoining lengths of pipe,
  - (c) prevent root penetration, and
  - (d) prevent the infiltration of surrounding material.

### 7.2.6.9. Sheet Metal Leaders

- (1) A sheet metal *leader* shall not be used except above ground outside a *building*.

## 7.2.7. Non-Ferrous Pipe and Fittings

### 7.2.7.1. Copper and Brass Pipe

- (1) Copper pipe shall conform to ASTM B42, "Seamless Copper Pipe, Standard Sizes".
- (2) Brass pipe shall conform to ASTM B43, "Seamless Red Brass Pipe, Standard Sizes".

### 7.2.7.2. Brass or Bronze Pipe Flanges and Flanged Fittings

- (1) Brass or bronze pipe flanges and flanged fittings shall conform to ASME B16.24, "Cast Copper Alloy Pipe Flanges and Flanged Fittings: Classes 150, 300, 600, 900, 1500 and 2500".

### 7.2.7.3. Brass or Bronze Threaded Water Fittings

- r<sub>5</sub> (1) Brass or bronze threaded water fittings shall conform to ASME B16.15, "Cast Copper Alloy Threaded Fittings: Classes 125 and 250".

- (2) Brass or bronze threaded water fittings shall not be used in a *drainage system*.

#### 7.2.7.4. Copper Tube

- (1) Copper tube in a *plumbing system* shall,
- be certified to ASTM B88, “Seamless Copper Water Tube”, or
  - comply with ASTM B306, “Copper Drainage Tube (DWV)”.
- (2) The use of copper tube shall conform to Table 7.2.7.4.

Table 7.2.7.4.  
Permitted Use of Copper Tube and Pipe  
Forming Part of Sentence 7.2.7.4.(2)

Type of Copper Tube or Pipe	<i>Water Distribution System</i>		<i>Building Sewer</i>	<i>Drainage System</i>		<i>Venting System</i>	
	Under ground	Above ground		Under ground	Above ground	Under ground	Above ground
K & L hard	N	P	P	P	P	P	P
K & L soft	P	P	N	N	N	N	N
M hard	N	P	N	N	P	N	P
M soft	N	N	N	N	N	N	N
DWV	N	N	N	N	P	N	P
Column 1	2	3	4	5	6	7	8

Notes to Table 7.2.7.4.:

P — Permitted

N — Not Permitted

- (3) Copper tube used in a *plumbing appliance* shall conform to,
- ASTM B88, “Seamless Copper Water Tube”, or
  - ASTM B68 / B68M, “Seamless Copper Tube, Bright Annealed”.
- (4) Type K or L copper tube shall be used for the *potable* water side of a heat exchanger in a pre-engineered wastewater heat recovery system.

#### 7.2.7.5. Solder-Joint Drainage Fittings

- (1) Solder-joint fittings for *drainage systems* shall conform to,
- ASME B16.23, “Cast Copper Alloy Solder Joint Drainage Fittings: DWV”, or
  - ASME B16.29, “Wrought Copper and Wrought Copper Alloy Solder Joint Drainage Fittings – DWV”.
- (2) Solder-joint fittings for *drainage systems* shall not be used in a *water system*.

#### 7.2.7.6. Solder-Joint Water Fittings

- (1) Except as provided in Sentence (2), solder-joint fittings for *water systems* shall conform to,
- ASME B16.18, “Cast Copper Alloy Solder Joint Pressure Fittings”, or
  - ASME B16.22, “Wrought Copper and Copper Alloy Solder Joint Pressure Fittings”.
- (2) Solder-joint fittings for *water systems* not made by casting or the wrought process shall conform to the applicable requirements of ASME B16.18, “Cast Copper Alloy Solder Joint Pressure Fittings”.

### 7.2.7.7. Flared-Joint Fittings for Copper Tube Water Systems

- (1) Flared-joint fittings for copper tube *water systems* shall conform to ASME B16.26, “Cast Copper Alloy Fittings for Flared Copper Tubes”.
- (2) Flared-joint fittings for copper tube *water systems* not made by casting shall conform to the applicable requirements of ASME B16.26, “Cast Copper Alloy Fittings for Flared Copper Tubes”.

### 7.2.7.8. Lead Waste Pipe and Fittings

- (1) Lead *waste pipe* and fittings shall not be used in a *water system* or for a *building sewer*.
- (2) When there is a change in *size* of a lead closet bend, the change shall be in the vertical section of the bend or made in such a manner that there shall be no retention of liquid in the bend.

## 7.2.8. Corrosion Resistant Materials

### 7.2.8.1. Pipe and Fittings

- (1) Pipes and fittings to be used for drainage and venting of acid and corrosive wastes shall conform to,
  - (a) ASTM A518 / A518M, “Corrosion-Resistant High-Silicon Iron Castings”,
  - (b) ASTM C1053, “Borosilicate Glass Pipe and Fittings for Drain, Waste, and Vent (DWV) Applications”, or
  - (c) CAN/CSA-B181.3, “Polyolefin and Polyvinylidene Fluoride (PVDF) Laboratory Drainage Systems”.

## 7.2.9. Jointing Materials

### 7.2.9.1. Cement-Mortar

- (1) Cement-mortar shall not be used for jointing.

### 7.2.9.2. Solder and Fluxes

- (1) Solders for solder joint fittings shall conform to ASTM B32, “Solder Metal” in accordance with the recommended use.
- (2) Solders and fluxes having a lead content in excess of 0.2 percent shall not be used in a *potable water system*.
- r<sub>5</sub> (3) Fluxes for soldered joints shall conform to ASTM B813, “Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube”.
- r<sub>5</sub> (4) Brazing alloys shall conform to ANSI/AWS A5.8M / A5.8, “Specification for Filler Metals for Brazing and Brazed Welding”, BCuP range.

## 7.2.10. Miscellaneous Materials

### 7.2.10.1. Floor Flanges

- (1) Brass floor flanges shall be certified to CSA B158.1, “Cast Brass Solder Joint Drainage, Waste and Vent Fittings”.
- (2) ABS floor flanges shall be certified to CAN/CSA-B181.1, “Acrylonitrile-Butadiene-Styrene (ABS) Drain, Waste, and Vent Pipe and Pipe Fittings”.

- (3) PVC floor flanges shall be certified to CAN/CSA-B181.2, “Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Drain, Waste, and Vent Pipe and Pipe Fittings”.
- (4) Cast iron, copper and aluminum floor flanges shall be suitable for the purpose.

### 7.2.10.2. Screws, Bolts, Nuts and Washers

- (1) Every screw, bolt, nut and washer shall be of materials that are resistant to corrosion, when used,
  - (a) to connect a water closet to a water closet flange,
  - (b) to anchor the water closet flange to the floor,
  - (c) to anchor the water closet to the floor, or
  - (d) to hold *cleanout* covers or floor drain grates.

### 7.2.10.3. Cleanout Fittings

- (1) Every plug, cap, nut or bolt that is intended to be removable from a ferrous fitting shall be of a non-ferrous material.
- (2) A *cleanout* fitting that as a result of normal maintenance operations cannot withstand the physical stresses of removal and reinstallation or cannot ensure a gas-tight seal shall not be installed.
- (3) A screw cap or test cap shall not be used as a *cleanout* plug or cover.

### 7.2.10.4. Mechanical Couplings

- (1) Groove and shoulder type mechanical pipe couplings shall conform to CSA B242, “Groove and Shoulder Type Mechanical Pipe Couplings”.
- (2) Mechanical Couplings for DWV and Sewer Pipe shall be certified to CAN/CSA-B602, “Mechanical Couplings for Drain, Waste, and Vent Pipe and Sewer Pipe”.

### 7.2.10.5. Saddle Hubs

- (1) Except as provided in Sentence (2), a saddle hub or fitting shall not be installed in *drainage systems, venting systems* or *water systems*.
- (2) A saddle hub or saddle clamp may be installed in a *building drain* or *building sewer* of nominal diameter not less than 8 in. and that is in service provided that the connecting *branch* is at least two pipe *sizes* smaller than the run of the *building drain* or *building sewer* to which it is connected.

### 7.2.10.6. Supply and Waste Fittings

- r<sub>3</sub> (1) Supply fittings shall conform to ASME A112.18.1 / CSA B125.1, “Plumbing Supply Fittings” or CSA B125.3, “Plumbing Fittings”.
- r<sub>5</sub> (2) Waste fittings shall conform to ASME A112.18.2 / CSA B125.2, “Plumbing Waste Fittings”.

### 7.2.10.7. Linings and Coatings of Domestic Water Tanks

- (1) Linings and coatings of domestic water tanks that come into contact with *potable* water shall be certified to NSF/ANSI 61, “Drinking Water System Components - Health Effects”.



### 7.2.10.8. Direct Flush Valves

- (1) Every direct flush valve shall,
  - (a) open fully and close positively under service pressure,
  - (b) complete its cycle of operation automatically,
  - (c) be provided with a means of regulating the volume of water that it discharges, and
  - (d) be provided with a *vacuum breaker* unless the *fixture* is designed so that *back-siphonage* cannot occur.

### 7.2.10.9. Drinking Fountain Bubblers

- (1) The orifice of every drinking fountain bubbler shall,
  - (a) be of the shielded type, and
  - (b) direct the water upward to an angle of approximately 45°.
- (2) Every drinking fountain bubbler shall include a means of regulating the flow to the orifice.

### 7.2.10.10. Back-Siphonage Preventers and Backflow Preventers

- $\Gamma_5$  (1) Except as provided in Sentence (2), *back-siphonage preventers* and *backflow preventers* shall be certified to,
  - (a) CSA B64.0, “Definitions, General Requirements and Test Methods for Vacuum Breakers and Backflow Preventers”,
  - (b) CSA B64.1.1, “Atmospheric Vacuum Breakers (AVB)”,
  - (c) CSA B64.1.2, “Pressure Vacuum Breakers (PVB)”,
  - (d) CSA B64.1.3, “Spill-resistant Pressure Vacuum Breakers (SRPVB)”,
  - (e) CSA B64.1.4, “Vacuum Breaker, Air Space Type (ASVB)”,
  - (f) CSA B64.2, “Hose Connection Vacuum Breakers (HCVB)”,
  - (g) CSA B64.2.1, “Hose Connection Vacuum Breakers (HCVB) with Manual Draining Feature”,
  - (h) CSA B64.2.1.1, “Hose Connection Dual Check Vacuum Breakers (HCDVB)”,
  - (i) CSA B64.2.2, “Hose Connection Vacuum Breakers (HCVB) with Automatic Draining Feature”,
  - (j) CSA B64.3, “Dual Check Valve Backflow Preventers with Atmospheric Port (DCAP)”,
  - (k) CSA B64.3.1, “Dual Check Valve Backflow Preventers with Atmospheric Port for Carbonators (DCAPC)”,
  - (l) CSA B64.4, “Reduced Pressure Principle (RP) Backflow Preventers”,
  - (m) CSA B64.5, “Double Check Valve (DCVA) Backflow Preventers”,
  - (n) CSA B64.6, “Dual Check Valve (DuC) Backflow Preventers”,
  - (o) CSA B64.7, “Laboratory Faucet Vacuum Breakers (LFVB)”,
  - (p) CSA B64.8, “Dual Check Valve Backflow Preventers with Intermediate Vent (DuCV)”, or
  - (q) CSA B64.10, “Selection and Installation of Backflow Preventers”.
- $\Gamma_3$  (2) *Back-siphonage preventers* (anti-siphon fill valves) for tank type water closets shall be certified to CSA B125.3, “Plumbing Fittings”.

### 7.2.10.11. Relief Valves

- (1) Temperature relief, pressure relief, combined temperature and pressure relief and vacuum relief valves shall conform to ANSI Z21.22 / CSA 4.4-M, “Relief Valves for Hot Water Supply Systems”.

### 7.2.10.12. Reducing Valves

- (1) Direct acting water pressure reducing valves for domestic water supply systems shall conform to CAN/CSA-B356, “Water Pressure Reducing Valves for Domestic Water Supply Systems”.

### 7.2.10.13. Solar Domestic Hot Water

(1) Equipment forming part of a packaged system for solar heating of *potable* water, shall conform to CAN/CSA-F379.1, “Packaged Solar Domestic Hot Water Systems (Liquid-to-Liquid Heat Transfer)”.

### 7.2.10.14. Vent Pipe Flashing

(1) Flashing fabricated on site for *vent pipes* shall be fabricated from,

- (a) copper sheet at least 0.33 mm thick,
- (b) aluminum sheet at least 0.48 mm thick,
- (c) alloyed zinc sheet at least 0.35 mm thick,
- (d) lead sheet at least 1.73 mm thick,
- (e) galvanized steel sheet at least 0.33 mm thick, or
- (f) polychloroprene (neoprene) at least 2.89 mm thick.

(2) Prefabricated flashing for *vent pipes* shall be certified to CSA B272, “Prefabricated Self-Sealing Roof Vent Flashings”.

### 7.2.10.15. Water Hammer Arresters

(1) Factory built water hammer arresters shall conform to ANSI/ASSE 1010, “Water Hammer Arresters”.

### 7.2.10.16. Air Admittance Valves

(1) Air admittance valves shall conform to ASSE 1051, “Individual and Branch Type Air Admittance Valves for Sanitary Drainage Systems”. (See Appendix A.)

### 7.2.10.17. Drinking Water Treatment Systems

(1) A drinking water treatment system or device shall be certified to CAN/CSA-B483.1, “Drinking Water Treatment Systems”.

## 7.2.11. Water Service Pipes and Fire Service Mains

### 7.2.11.1. Design, Construction, Installation and Testing

(1) Except as provided in Articles 7.2.11.2. to 7.2.11.4., and 7.3.7.2, the design, construction, installation and testing of *fire service mains* and *water service pipe* combined with *fire service mains* shall be in conformance with NFPA 24, “Installation of Private Fire Service Mains and Their Appurtenances”.

### 7.2.11.2. Certification or Conformance

(1) *Water service pipes* and *fire service mains* shall be certified or conform to the standards for the materials listed in Table 7.2.11.2.

Table 7.2.11.2.  
Water Service Pipe and Fire Service Main Materials  
Forming Part of Sentence 7.2.11.2.(1)

Material	Standard	Limitations
Polyethylene pipe and fittings	Certified to Series 160 or a higher series of CAN/CSA-B137.1, "Polyethylene (PE) Pipe, Tubing and Fittings for Cold Water Pressure Services"	
Crosslinked polyethylene pressure pipe or tube and fittings	Certified to CAN/CSA-B137.5, "Crosslinked Polyethylene (PEX) Tubing Systems for Pressure Applications"	
r <sub>5</sub> PVC pipe and fittings	Certified to CAN/CSA-B137.3, "Rigid Polyvinylchloride (PVC) Pipe and Fittings for Pressure Applications", or certified to CAN/CSA-B137.2, "Polyvinylchloride (PVC) Injection-Moulded Gasketed Fittings for Pressure Applications"	Pipe and fittings must have a rated working pressure of 1 100 kPa or more
CPVC pipe and fittings	Certified to CAN/CSA-B137.6, "Chlorinated Polyvinylchloride (CPVC) Pipe, Tubing and Fittings for Hot and Cold Water Distribution Systems"	The design temperature and pressure shall conform to the requirements of the CAN/CSA-B137.6, "Chlorinated Polyvinylchloride (CPVC) Pipe, Tubing and Fittings for Hot and Cold Water Distribution Systems"
r <sub>5</sub> Cast iron water pipe	Conform to ANSI/AWWA C151 / A21.51, "Ductile-Iron Pipe, Centrifugally Cast"	Pipe shall have a cement-mortar lining conforming to ANSI/AWWA C104 / A21.4, "Cement-Mortar Lining for Ductile-Iron Pipe and Fittings"
Iron fittings for cast iron or ductile-iron water pipes	Conform to ANSI/AWWA C110 / A21.10, "Ductile-Iron and Gray-Iron Fittings"	Pipe shall have a cement-mortar lining conforming to ANSI/AWWA C104 / A21.4, "Cement-Mortar Lining for Ductile-Iron Pipe and Fittings"
Rubber gasket joints for cast iron and ductile-iron water pipes	Conform to ANSI/AWWA C111 / A21.11, "Rubber Gasket Joints for Ductile-Iron Pressure Pipe and Fittings"	
r <sub>5</sub> Screwed cast iron water fittings	Conform to ASME B16.4, "Gray Iron Threaded Fittings: Classes 125 and 250"	Screwed cast iron water fittings shall be cement-mortar lined or galvanized
Type K soft copper tube	Certified to ASTM B88, "Seamless Copper Water Tube"	
Solder-joint fittings for copper water systems	Conform to ASME B16.18, "Cast Copper Alloy Solder Joint Pressure Fittings", or conform to ASME B16.22, "Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings"	Solder-joint fittings not made by casting or the wrought process shall conform to the applicable requirements of ASME B16.18, "Cast Copper Alloy Solder-Joint Pressure Fittings"
Flared-joint fittings for copper water systems	Conform to ASME B16.26, "Cast Copper Alloy Fittings for Flared Copper Tubes"	Flared-joint fittings not made by casting shall conform to ASME B16.26, "Cast Copper Alloy Fittings for Flared Copper Tubes"
PE/AL/PE pipe and fittings	Certified to CAN/CSA-B137.9, "Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure-Pipe Systems"	
PEX/AL/PEX pipe and fittings	Certified to CAN/CSA-B137.10, "Crosslinked Polyethylene/ Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Composite Pressure-Pipe Systems"	
Column 1	2	3

### 7.2.11.3. Tracer Wire

- (1) Except as provided in Sentence (2), a 14 gauge TW solid copper light coloured plastic coated tracer wire shall be attached to every non-metallic *water service pipe* or *fire service main*.
- (2) Where a *water service pipe* or *fire service main* is detectable without the tracer wire referenced in Sentence (1), the tracer wire may be omitted.

### 7.2.11.4. Required Check Valve

- (1) Where a *water service pipe* is supplied with water by more than one *drinking water system*, a *check valve* shall be installed at each connection with a *drinking water system*.
- (2) Where a *fire service main* is supplied with water by more than one source, a *check valve* shall be installed at each connection with a source of water.

## Section 7.3. Piping

### 7.3.1. Application

#### 7.3.1.1. Application

- (1) This Section applies to the *construction* and use of joints and connections, and the arrangement, protection, support and testing of piping.

### 7.3.2. Construction and Use of Joints

#### 7.3.2.1. Caulked Lead Drainage Joints

- (1) Every caulked lead drainage joint shall be firmly packed with oakum and tightly caulked with lead to a depth of at least 25 mm.
- (2) No paint, varnish or other coating shall be applied on the lead until after the joint has been tested.
- (3) Caulked lead drainage joints shall not be used except for cast iron pipe in a *drainage system* or *venting system*, or between such pipe and,
  - (a) other ferrous pipe,
  - (b) brass and copper pipe,
  - (c) a caulking ferrule, or
  - (d) a *trap standard*.
- (4) A length of hub and spigot pipe and pipe fittings in a *drainage system* shall be installed with the hub at the upstream end.

#### 7.3.2.2. Wiped Joints

- (1) Wiped joints shall not be used except for sheet lead or lead pipe, or between such pipe and copper pipe or a ferrule.

- (a) are in the same room, and
  - (b) are not located where they can receive food or other organic matter.
- (4) Reserved
- (5) A grease *interceptor* shall not serve as a *fixture trap* and each *fixture* discharging through the *interceptor* shall be trapped and vented.
- (6) Where a domestic dishwashing machine equipped with a drainage pump discharges through a direct connection into the *fixture outlet pipe* of an adjacent kitchen sink or disposal unit, the pump discharge line shall,
- (a) rise as high as possible to just under the counter, and
  - (b) connect,
    - (i) on the inlet side of the sink *trap* by means of a Y fitting, or
    - (ii) to the disposal unit.

#### **7.4.5.2. Traps for Storm Drainage Systems**

- (1) Where a *storm drainage system* is connected to a public combined sewer, a *trap* shall be installed between any opening in the system and the drain or sewer, except that no *trap* is required if the opening is the upper end of a *leader* that terminates,
- (a) at a roof that is used only for weather protection,
  - (b) not less than 1 000 mm above or not less than 3.5 m in any other direction from any air inlet, openable window or door, and
  - (c) not less than 1 800 mm from a property line.

#### **7.4.5.3. Connection of Subsoil Drainage Pipe to a Sanitary Drainage System**

- (1) Except as permitted in Sentence (2), no foundation drain or *subsoil drainage pipe* shall connect to a *sanitary drainage system*.
- (2) Where a *storm drainage system* is not available or *soil* conditions prevent drainage to a culvert or dry well, a foundation drain or *subsoil drainage pipe* may connect to a *sanitary drainage system*.
- (3) Where a *subsoil drainage pipe* may be connected to a *sanitary drainage system*, the connection shall be made on the upstream side of a *trap* with a *cleanout* or a trapped sump.

#### **7.4.5.4. Location and Cleanout for Building Traps**

- (1) Where a *building trap* is installed, it shall,
- (a) be provided with a *cleanout* fitting on the upstream side of and directly over the *trap*,
  - (b) be located upstream of the *building cleanout*, and
  - (c) be located,
    - (i) inside the *building* as close as practical to the place where the *building drain* leaves the *building*, or
    - (ii) outside the *building* in a manhole.

#### **7.4.5.5. Trap Seals**

- (1) Provision shall be made for maintaining the *trap* seal of a floor drain or a *hub drain* by the use of a *trap* seal primer, by using the drain as a receptacle for an *indirectly connected* drinking fountain, or by equally effective means.
- (2) Where a mechanical device is installed to furnish water to a *trap*, the pipe or tube conveying water from the device to the *trap* shall be at least  $\frac{3}{8}$  in. inside diameter.

## 7.4.6. Arrangement of Drainage Piping

### 7.4.6.1. Separate Systems

- (1) No vertical *soil* or *waste pipe* shall conduct both *sanitary sewage* and *storm sewage*.
- (2) There shall be no unused open ends in a *drainage system* and *dead ends* shall be so graded that water will not collect in them.

### 7.4.6.2. Location of Soil or Waste Pipes

- (1) A *soil* or *waste pipe* shall not be located directly above,
  - (a) non-pressure *potable* water storage tanks,
  - (b) manholes in pressure *potable* water storage tanks, or
  - (c) food-handling or processing equipment.

### 7.4.6.3. Sumps or Tanks (See Appendix A.)

- (1) Only piping that is too low to drain into a *building sewer* by gravity shall be drained to a sump or receiving tank.
- (2) Where the sump or tank receives *sanitary sewage* it shall be water and air-tight and shall be vented.
- (3) Equipment such as a pump or ejector that can lift the contents of the sump or tank and discharge it into the *sanitary building drain* or *sanitary building sewer* shall be installed.
- (4) Where the equipment does not operate automatically, the *capacity* of the sump shall be sufficient to hold at least a 24 hour accumulation of liquid.
- (5) Where there is a *building trap*, the discharge pipe from the equipment shall be connected to the *sanitary building drain* downstream of the *trap*.
- (6) The discharge pipe from every pumped *sanitary sewage* sump shall be equipped with a union, a *check valve* and a shut-off valve installed in that sequence in the direction of discharge.
- (7) The discharge piping from a pump or ejector shall be sized for optimum flow velocities at pump design conditions.
- (8) The discharge pipe from every pumped *storm sewage* sump shall be equipped with,
  - (a) a union and a *check valve* installed in that sequence in the direction of discharge and pumped to above grade level, or
  - (b) a union, a *check valve* and a shut-off valve installed in that sequence in the direction of discharge.

### 7.4.6.4. Protection from Backflow (See Appendix A.)

- (1) Except as permitted in Sentence (2), a *backwater valve* that would prevent free circulation of air shall not be installed in a *building drain* or in a *building sewer*.
- (2) A *backwater valve* may be installed in a *building drain* provided that,
  - (a) it is a “normally open” design conforming to,
    - (i) CAN/CSA-B70, “Cast Iron Soil Pipe, Fittings, and Means of Joining”,
    - (ii) CAN/CSA-B181.1, “Acrylonitrile-Butadiene-Styrene (ABS) Drain, Waste, and Vent Pipe and Pipe Fittings”,
    - (iii) CAN/CSA-B181.2, “Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Drain, Waste, and Vent Pipe and Pipe Fittings”, or
    - (iv) CAN/CSA-B182.1, “Plastic Drain and Sewer Pipe and Pipe Fittings”, and

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(3) Except as provided in Sentences (4) and (5), a *relief vent* shall be connected to the *branch* that forms part of a circuit vented system, downstream of the connection of the most downstream circuit vented *fixture*.

(4) A *soil* or *waste pipe* having a hydraulic load not greater than six *fixture units* may act as a *relief vent* for a *branch* that is being circuit vented.

(5) A symmetrically connected *relief vent* may serve as a combined *relief vent* for a maximum of two *branches* that are circuit vented, provided there are not more than eight circuit vented *fixtures* connected between the combined *relief vent* and each *circuit vent*.

- †5 (6) *Additional circuit vents* shall be required,
- (a) when each cumulative horizontal change in direction of a *branch* served by a *circuit vent* exceeds 45° between *vent pipe* connections, or
  - (b) where more than eight circuit vented *fixtures* are connected to a *branch* between *vent pipe* connections.
- (7) A *soil* or *waste pipe* may serve as an *additional circuit vent* in accordance with Sentence (6) provided that the *soil* or *waste pipe* is sized as a *wet vent* in conformance with Article 7.5.8.1. and is not less than 2 in. in *size*.
- (8) Connections to *circuit vents* and *additional circuit vents* in accordance with Sentence (6) shall conform to Sentence 7.5.4.5.(1).
- (9) A circuit vented *branch*, including the *fixture drain* downstream of the *circuit vent* connection, shall be sized in accordance with Articles 7.4.10.7. and 7.4.10.8., except that it shall be not less than,
- (a) 2 in., where *traps* less than 2 in. in *size* are circuit vented, or
  - (b) 3 in., where *traps* 2 in. in *size* or larger are circuit vented.
- (10) *Additional circuit vents* shall be sized in accordance with Table 7.5.7.1. and Sentence 7.5.7.3.(1).
- (11) The hydraulic load on a *circuit vent* shall include the hydraulic load from *fixtures* connected to the *branch* served by the *circuit vent*, but shall not include the hydraulic load from *fixtures* permitted by Sentences (3), (4) and (5).

## 7.5.4. Vent Pipes for Soil or Waste Stacks

### 7.5.4.1. Stack Vents

(1) The upper end of every *soil* or *waste stack* shall terminate in a *stack vent* and the *stack vent* shall terminate in *open air* outside the *building*, or connect directly or through a *header* to another *stack vent* or *vent stack* that does terminate in *open air* outside the *building*.

### 7.5.4.2. Vent Stacks

- (1) Except as provided in Sentence (2), every *soil* or *waste stack* draining *fixtures* from more than 4 *storeys* shall have a *vent stack*.
- (2) A *soil* or *waste stack* that serves as a *wet vent* does not require a *vent stack*.
- (3) The *vent stack* required by Sentence (1) shall be connected to a vertical section of the *soil* or *waste stack* at or immediately below the lowest *soil* or *waste pipe* connected to the *soil* or *waste stack*.
- (4) *Fixtures* may be connected to a *vent stack* provided,
  - (a) the total hydraulic load of the connected *fixtures* does not exceed eight *fixture units*,
  - (b) at least one *fixture* is connected to a vertical portion of the *vent stack* and upstream of any other *fixtures*,
  - (c) no other *fixture* is connected downstream of a water closet,

- (d) all *fixtures* are located in the lowest *storey* served by the *vent stack*, and
- (e) the section of the *vent pipe* that acts as a *wet vent* conforms to the requirements regarding *wet vents*.

### 7.5.4.3. Yoke Vents

- (1) Except as provided in Sentence (4), where a *soil* or *waste stack* receives the discharge from *fixtures* located on more than 11 *storeys*, a *yoke vent* shall be,
  - (a) installed for each section of 5 *storeys* or part of them counted from the top down,
  - (b) installed at or immediately above each *offset* or double *offset*, and
  - (c) sized in accordance with Sentence 7.5.7.5.(1).
- (2) The *yoke vent* shall be connected to the *soil* or *waste stack* by means of a drainage fitting at or immediately below the lowest *soil* or *waste pipe* from the lowest *storey* of the sections described in Sentence (1).
- (3) The *yoke vent* shall connect to the *vent stack* at least 1 000 mm above the floor level of the lowest *storey* in the section described in Sentence (1).
- (4) A *yoke vent* need not be installed provided the *soil* or *waste stack* is interconnected with the *vent stack* in each *storey* of the section in which *fixtures* are located by means of a *vent pipe* equal in *size* to the *branch* or *fixture drain* or 2 in. in *size*, whichever is smaller.

### 7.5.4.4. Offset Relief Vents

- (1) A *soil* or *waste stack* that has a *nominally horizontal offset* more than 1 500 mm long and above which the upper vertical portion of the stack passes through more than 2 *storeys* and receives a hydraulic load of more than 100 *fixture units* shall be vented by an *offset relief vent* connected to the vertical section immediately above the *offset*, and by another *offset relief vent*,
  - (a) connected to the lower vertical section at or above the highest *soil* or *waste pipe* connection, or
  - (b) extended as a vertical continuation of the lower section.

### 7.5.4.5. Fixtures Draining into Vent Pipes

- (1) The *trap arm* of a *fixture* that has a hydraulic load of not more than 1½ *fixture units* may be connected to the vertical section of a *circuit vent*, *additional circuit vent*, *offset relief vent* or *yoke vent*, provided that,
  - (a) not more than two *fixtures* are connected to the *vent pipe*,
  - (b) where two *fixtures* are connected to the *vent pipe*, the connection is by means of a double fitting, in accordance with Table 7.2.4.5., and
  - (c) the section of the *vent pipe* that acts as a *wet vent* conforms to the requirements regarding *wet vents*.

## 7.5.5. Miscellaneous Vent Pipes

### 7.5.5.1. Venting of Sanitary Sewage Sumps

- (1) Every sump or tank that receives *sanitary sewage* shall be provided with a *vent pipe* that is connected to the top of the sump or tank.

### 7.5.5.2. Venting of Interceptors

- (1) Every oil *interceptor* shall be provided with 2 *vent pipes* that,
  - (a) connect to the *interceptor* at opposite ends,
  - (b) extend independently to *open air*,
  - (c) terminate not less than 2 000 mm above ground and at elevations differing by at least 300 mm, and
  - (d) do not connect to each other or any other *vent pipe*.



## Section 7.6. Potable Water Systems

### 7.6.1. Arrangement of Piping

#### 7.6.1.1. Design

- (1) Every *fixture* supplied with separate hot and cold water controls shall have the hot water control on the left and the cold on the right.
- (2) Where hot and cold water are mixed and the temperature is regulated by a single, unmarked, manual control, a movement to the left shall increase the temperature and a movement to the right shall decrease the temperature.
- (3) In a hot water *distribution system* of a *developed length* of more than 30 m or supplying more than 4 *storeys*, the water temperature shall be maintained by,
  - (a) recirculation, or
  - (b) a self-regulating heat tracing system.

#### 7.6.1.2. Drainage

- (1) A *water distribution system* shall be installed so that the system can be drained or blown out with air and outlets for this purpose shall be provided.

#### 7.6.1.3. Control and Shut-Off Valves

- (1) A *building control valve* shall be provided,
  - (a) on every *water service pipe* at the location where the *water service pipe* enters the *building*, or
  - (b) on the *water distribution system* at a location immediately downstream of the *point of entry treatment unit*, where the *building* is served by a *point of entry treatment unit* located in the *building*.
- (2) Except as provided in Sentence (3), a drain port shall be provided on the *water distribution system* immediately downstream of the *building control valve* required by Sentence (1) and if there is a meter, the drain port shall be installed immediately downstream of the meter on the *water distribution system*.
- (3) Where the *building control valve* required by Sentence (1) is of 1 in. trade *size* or smaller, the drain port may be an integral part of the *building control valve* in the form of a stop and waste valve and the drain port shall be located on the *water distribution system* side of the stop and waste valve.
- (4) Every pipe that is supplied with water from a tank on the property that is a gravity water tank or a tank of a *drinking water system* shall be provided with a shut-off valve located close to the tank.
- (5) Where the water supply is to be metered, the installation of the meter, including the piping that is part of the meter installation and the valving arrangement for the meter installation, shall be according to the *water purveyor's* requirements.
- r5 (6) For the purpose of identifying the pipe material where plastic water pipe is used underground for a service pipe, the end of the pipe inside the *building* shall be brought above ground for a distance not less than 300 mm and not greater than 450 mm. (See Appendix A.)

#### 7.6.1.4. Shut-Off Valves

- (1) Except for a single-family dwelling, every *riser* shall be provided with a shut-off valve at the source of supply.

### 7.6.1.5. Water Closets

- (1) Every water closet shall be provided with a shut-off valve on its water supply pipe.

### 7.6.1.6. Suites

- (1) Shut-off valves shall be installed in every *suite* in a *building of residential occupancy* as may be necessary to ensure that when the supply to one *suite* is shut off the supply to the remainder of the *building* is not interrupted. (See Appendix A.)

### 7.6.1.7. Public Washrooms

- (1) The water supply to each *fixture* in a washroom for *public use* shall be individually valved and each valve shall be *accessible*.

### 7.6.1.8. Tanks

- (1) Every water pipe that supplies a hot water tank, pressure vessel, *plumbing appliance* or water using device shall be provided with a shut-off valve located close to the tank, pressure vessel, *plumbing appliance* or water using device.

### 7.6.1.9. Protection for Exterior Water Supply

- (1) Every pipe that passes through an exterior wall to supply water to the exterior of the *building* shall be provided with,
  - (a) a frost-proof hydrant with a separate shut-off valve located inside the *building*, or
  - (b) a stop-and-waste cock located inside the *building* and close to the wall.

### 7.6.1.10. Check Valves

- (1) A *check valve* shall be installed at the *building* end of the *water service pipe* where the pipe is made of plastic that is suitable for cold water use only. (See Appendix A.)

### 7.6.1.11. Flushing Devices

- (1) Every flushing device that serves a water closet or one or more urinals shall have sufficient capacity and be adjusted to deliver at each operation a volume of water that will thoroughly flush the *fixture* or *fixtures* that it serves.
- (2) Where a manually operated flushing device is installed, it shall serve only one *fixture*.

### 7.6.1.12. Relief Valves (See Appendix A.)

- (1) Every pressure vessel that is part of a *plumbing system* or connected to a *plumbing system* shall be equipped with a pressure relief valve designed to open when the water pressure in the tank reaches the rated working pressure of the tank, and so located that the pressure in the tank shall not exceed 1 100 kPa or one-half the maximum test pressure sustained by the tank, whichever is the lesser.
- (2) Every hot water tank of a *storage-type service water heater* shall be equipped with a temperature relief valve with a temperature sensing element,
  - (a) located within the top 150 mm of the tank, and
  - (b) designed to open and discharge sufficient water from the tank to keep the temperature of the water in the tank from exceeding 99°C under all operating conditions.

- (3) A pressure relief valve and temperature relief valve may be combined where Sentences (1) and (2) are complied with.
- (4) Every *indirect service water heater* shall be equipped with,
- (a) a pressure relief valve, and
  - (b) a temperature relief valve on every storage tank that forms part of the system.
- (5) Every pipe that conveys water from a temperature relief, pressure relief, or a combined temperature and pressure relief valve shall,
- (a) be of a *size* at least equal to the *size* of the outlet of the valve,
  - (b) be rigid, slope downward from the valve, and,
    - (i) terminate with an indirect connection above a floor drain, sump or other safe location, with an *air break* of not more than 300 mm, or
    - (ii) terminate at a distance not less than 150 mm and not more than 300 mm from a floor and discharge vertically down,
  - (c) have no thread at its outlet, and
  - (d) be capable of operating at a temperature of not less than 99°C.
- (6) The temperature relief valve required in Clause (4)(b) shall,
- (a) have a temperature sensing element located within the top 150 mm of the tank, and
  - (b) be designed to open and discharge sufficient water to keep the temperature of the water in the tank from exceeding 99°C under all operating conditions.
- (7) No shut-off valve shall be installed on the pipe between any tank and the relief valves or on the discharge lines from such relief valves.

### 7.6.1.13. Solar Domestic Hot Water Systems

- (1) Except as provided in Sentence (2), a system for solar heating of *potable* water shall be installed in accordance with good engineering practice.
- (2) Packaged systems for solar heating of *potable* water in *residential occupancies* shall be installed in conformance with CAN/CSA-F383, “Installation of Packaged Solar Domestic Hot Water Systems”.

### 7.6.1.14. Water Hammer

- (1) Provision shall be made to protect the *water distribution system* from the adverse effects of water hammer. (See Appendix A.)

### 7.6.1.15. Mobile Home Water Service

- (1) A *water service pipe* intended to serve a mobile home shall,
- (a) be not less than  $\frac{3}{4}$  in. in *size*,
  - (b) be terminated above ground, and
  - (c) be provided with,
    - (i) a tamperproof terminal connection that is capable of being repeatedly connected, disconnected and sealed,
    - (ii) a protective concrete pad,
    - (iii) a means to protect it from frost heave, and
    - (iv) a curb stop and a means of draining that part of the pipe located above the frost line when not in use.

### 7.6.1.16. Thermal Expansion

(1) Protection against thermal expansion shall be required when a *check valve* is required by Article 7.6.1.10., a *backflow preventer* is required by Article 7.6.2.2., or a pressure reducing valve is required by Article 7.6.3.3. (See Appendix A.)

## 7.6.2. Protection from Contamination

### 7.6.2.1. Connection of Systems

(1) Connections to *potable water systems* shall be designed and installed so that non-*potable* water or substances that may render the water non-*potable* cannot enter the system.

(2) No connection shall be made between a *potable water system* supplied with water from a *drinking water system* and any other *potable water system* without the consent of the *water purveyor*.

### 7.6.2.2. Back-Siphonage

(1) Every *potable water system* that supplies a *fixture* or tank that is not subject to pressures above atmospheric shall be protected against *back-siphonage* by a *backflow preventer*.

(2) Where a *potable water supply* is connected to a boiler, tank, cooling jacket, lawn sprinkler system or other device where a non-*potable* fluid may be under pressure that is above atmospheric or the water outlet may be submerged in the non-*potable* fluid, the water supply shall be protected against *backflow* by a *backflow preventer*.

(3) Where a hose bibb is installed outside a *building*, inside a garage, or where there is an identifiable risk of contamination, the *potable water system* shall be protected against *backflow* by a *backflow preventer*.

### 7.6.2.3. Protection from Backflow

(1) Except as provided in Sentence (3) and Articles 7.6.2.4. to 7.6.2.6., where a *backflow preventer* is required by this Subsection, the *backflow preventer* shall be selected, installed and tested in conformance with CSA B64.10, "Selection and Installation of Backflow Preventers".

(2) *Backflow preventers* shall be provided in conformance with Sentence 7.2.10.10.(1).

(3) Tank type water closet valves shall be provided with a *back-siphonage preventer* in conformance with Sentence 7.2.10.10.(2).

### 7.6.2.4. Backflow from Fire Protection Systems

(1) A *backflow preventer* shall not be required in a *residential full flow through fire sprinkler system*, in which the pipe and fittings are constructed of *potable water system* materials.

(2) Except as required in Sentence (4), *potable water system* connections to fire sprinkler and standpipe systems shall be protected against *backflow* caused by *back-siphonage* or *back pressure* in conformance with the following Clauses:

- F5
 (a) *Residential partial flow through fire sprinkler systems* in which the pipes and fittings are constructed of *potable water system* materials shall be protected by a dual *check valve backflow preventer* conforming to CSA B64.6.1, "Dual Check Valve Backflow Preventers for Fire Protection Systems (DuCF)",
- F5
 (b) *Class 1 fire sprinkler/standpipe systems* shall be protected by a single *check valve backflow preventer* conforming to CSA B64.9, "Single Check Valve Backflow Preventers for Fire Protection Systems (SCVAF)", provided that the systems do not use antifreeze or other additives of any kind and all pipes and fittings are constructed of *potable water system* materials,

- r<sub>5</sub>
 (c) *Class 1 fire sprinkler/standpipe systems* not covered by Clause (b) as well as *Class 2* and *Class 3 fire sprinkler/standpipe systems* shall be protected by a double *check valve backflow preventer* conforming to CSA B64.5.1, “Double Check Valve Backflow Preventers for Fire Protection Systems (DCVAF)”, provided that the systems do not use antifreeze or other additives of any kind,
- r<sub>5</sub>
 (d) *Class 1, Class 2 or Class 3 fire sprinkler/standpipe systems*, in which antifreeze or other additives are used, shall be protected by a reduced pressure principle *backflow preventer* conforming to CSA B64.4.1, “Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)”, installed on the portion of the system that uses the additives and the balance of the system shall be protected as required by Clause (b) or (c),
- r<sub>5</sub>
 (e) *Class 4* and *Class 5 fire sprinkler/standpipe systems* shall be protected by a reduced pressure principle *backflow preventer* conforming to CSA B64.4.1, “Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)”,
- r<sub>5</sub>
 (f) *Class 6 fire sprinkler/standpipe systems* shall be protected,
  - r<sub>5</sub>
 (i) by a double *check valve backflow preventer* conforming to CSA B64.5.1, “Double Check Valve Backflow Preventers for Fire Protection Systems (DCVAF)”, or
  - r<sub>5</sub>
 (ii) where a severe hazard may be caused by *backflow*, by a reduced pressure principle *backflow preventer* conforming to CSA B64.4.1, “Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)”, and
- (g) *backflow preventers* on fire sprinkler and standpipe systems shall be selected and installed in conformance with Table 7.6.2.4.

Table 7.6.2.4.  
Backflow Preventers on Fire Sprinkler and Standpipe Systems  
Forming Part of Sentence 7.6.2.4.(2)

CSA Standard Number	Type of Device <sup>(1)</sup>	System Made with Potable Water System Materials		System Not Made with Potable Water System Materials	
		Minor Hazard <sup>(2)</sup> Residential Partial Flow-Through System	Minor Hazard <sup>(2)</sup> Class 1 System	Moderate Hazard <sup>(2)</sup> Class 1, 2, 3 and 6 Systems	Severe Hazard <sup>(2)</sup> – Any Class of System in which Antifreeze or Other Additives Are Used
B64.6.1	DuCF	P	NP	NP	NP
B64.9	SCVAF	P	P	NP	NP
B64.5.1	DCVAF	P	P	P	NP
B64.4.1	RPF	P	P	P	P
Column 1	2	3	4	5	6

Notes to Table 7.6.2.4.:

P – Permitted

NP – Not Permitted

(1) The product is only permitted for use on fire sprinkler and standpipe systems.

(2) Minor Hazard, Moderate Hazard and Severe Hazard have the same meaning as indicated in CSA B64.10 “Selection and Installation of Backflow Preventers”.

(3) The *backflow preventer* required by Sentence (2) shall be installed upstream of the fire department pumper connection.

- r<sub>5</sub>
 (4) Where a reduced pressure principle *backflow preventer* is required on the *water service pipe* at a service connection located on the same premises as the *fire service main* in *Class 3, 4, 5 and 6 fire sprinkler/standpipe systems*, a reduced pressure principle *backflow preventer* conforming to CSA B64.4.1, “Reduced Pressure Principle Backflow Preventers for Fire Protection Systems (RPF)”, shall also be provided on the fire service connection.

### 7.6.2.5. Backflow from Buildings with a Solar Domestic Hot Water System

(See Appendix A.)

- (1) Except as permitted by Sentence (2) and as provided in Sentences (3) and (4), a *potable water system* shall be protected against *backflow* where the heat transfer loop of a solar domestic hot water system is *directly connected* to the *potable water system*.
- (2) Where the heat transfer loop of the solar domestic hot water system consists of direct flow-through of *potable* water only, protection against *backflow* is not required.
- (3) A *potable water system* that is *directly connected* to the heat transfer loop of a solar domestic hot water system that serves a *residential occupancy* within the scope of Part 9 shall be provided with a *backflow preventer* selected in accordance with CAN/CSA-F379.1, “Packaged Solar Domestic Hot Water Systems (Liquid-to-Liquid Heat Transfer)”.
- r<sub>5</sub> (4) Where a solar domestic hot water system includes a single wall heat exchanger and contains only a relatively harmless heat transfer fluid as described in CAN/CSA-F379.1, “Packaged Solar Domestic Hot Water Systems (Liquid-to-Liquid Heat Transfer)”, the *backflow* prevention required in Sentence (1) is permitted to be a dual *check valve backflow preventer* conforming to CSA B64.3, “Dual Check Valve Backflow Preventers with Atmospheric Port (DCAP)”.

### 7.6.2.6. Premise Isolation (See Appendix A.)

- (1) *Buildings* or facilities where a moderate hazard or severe hazard may be caused by *backflow* shall be provided with premise isolation of the *potable water system* by the installation of a *backflow preventer* selected in accordance with Clauses 5.3.4.2.(b) and (c) of CSA B64.10, “Selection and Installation of Backflow Preventers”.
- (2) *Buildings* of *residential occupancy* within the scope of Part 9 are not required to be isolated unless they have access to an *auxiliary water supply*.
- r<sub>5</sub> (3) Except as provided in Sentence (1), where no direct connection exists between the *auxiliary water supply* and the *potable water system*, premise isolation shall be provided by a dual *check valve backflow preventer* conforming to CSA B64.6, “Dual Check Valve (DuC) Backflow Preventers”.

### 7.6.2.7. Reserved

### 7.6.2.8. Cleaning of Systems

- (1) A newly installed part of a *potable water system* shall be cleaned and then flushed with *potable* water before the system is put into operation. (See Appendix A.)

### 7.6.2.9. Air Gap

- (1) An *air gap* shall not be located in a noxious environment.
- (2) Every *air gap* shall be not less than 25 mm high and at least twice the diameter of the opening of the water supply outlet in height.

### 7.6.2.10. Vacuum Breakers and Flood Levels

- (1) Where the *critical level* is not marked on an atmospheric *vacuum breaker* or pressure *vacuum breaker*, the *critical level* shall be taken as the lowest point on the device.

- (2) Sentence (1) does not apply to hot water supplied to installed dishwashers or clothes washers.

### **7.6.5.2. Showers**

- r<sub>3</sub>** (1) Except as provided for in Sentences (2) and (3), all valves supplying fixed location shower heads, shall be individually pressure-balanced or thermostatic-mixing valves, conforming to ASME A112.18.1 / CSA B125.1, “Plumbing Supply Fittings”.
- r<sub>3</sub>** (2) An individually pressure-balanced or thermostatic-mixing valve shall not be required for showers if a single temperature water supply for such showers is controlled by a master thermostatic-mixing valve conforming to CSA B125.3, “Plumbing Fittings”.
- (3) Deck-mounted, hand-held, flexible-hose spray attachments are exempt from the thermal shock requirements of Sentence (1).
- (4) Pressure-balanced or thermostatic-mixing valves shall be,
- designed so that the outlet temperature does not exceed 49°C, or
  - equipped with high-limit stops which shall be adjusted to a maximum hot water setting of 49°C.

### **7.6.5.3. Temperature Control Devices**

- (1) A *water distribution system* supplying hot water to any bathtub, shower or hand basin that is accessible to a patient or resident in a Group B, Division 2 or 3 occupancy or a resident of a group home, *home for special care* or residence for adults with developmental disabilities shall have one or more temperature gauges and control devices that are,
- accessible only to supervisory staff, and
  - capable of being adjusted to ensure that the temperature of the water supplied to the *fixtures* does not exceed 49°C.

## **Section 7.7. Non-Potable Water Systems**

### **7.7.1. Connection**

#### **7.7.1.1. Non-Potable Connection**

- (1) Except as permitted by Sentences (2) and (3), a *non-potable water system* shall not be connected to a *potable water system*.
- (2) Make-up water may be supplied to the *non-potable water system* by,
- a reduced pressure *backflow preventer*, or
  - an *air gap*.
- r<sub>5</sub>** (3) Where a clothes washer is supplied by a *rainwater system* and a *potable water system*, the *potable water system* shall be protected by dual *check valve backflow preventers* conforming to CSA B64.6, “Dual Check Valve (DuC) Backflow Preventers” for,
- area isolation, and
  - premise isolation.

## 7.7.2. Identification

### 7.7.2.1. Markings Required

- (1) Non-*potable* water piping shall be identified by markings that are permanent, distinct and easily recognized.
- (2) Non-*potable water system* for re-use purposes shall be marked in accordance with Section 12 of CAN/CSA-B128.1, “Design and Installation of Non-Potable Water Systems”.
- (3) A sign containing the words **NON-POTABLE WATER, DO NOT DRINK** shall be in letters at least 25 mm high with a 5 mm stroke and posted immediately above a *fixture* that is permitted to receive non-*potable* water.

## 7.7.3. Location

### 7.7.3.1. Pipes

- (1) Non-*potable* water piping shall not be located,
  - (a) where food is prepared in a food processing plant,
  - (b) above food-handling equipment,
  - (c) above a non-pressurized *potable* water tank, or
  - (d) above a cover of a pressurized *potable* water tank.

### 7.7.3.2. Outlets

- (1) Except as permitted in Sentence 7.1.5.3.(3), an outlet from a non-*potable water system* shall not be located where it can discharge into,
  - (a) a sink or lavatory,
  - (b) a *fixture* into which an outlet from a *potable water system* is discharged, or
  - (c) a *fixture* that is used for a purpose related to the preparation, handling or dispensing of food, drink or products that are intended for human consumption.

## 7.7.4. Non-Potable Water Systems for Re-use Purposes

### 7.7.4.1. Conformance to Standards

- (1) Non-*potable water systems* for re-use purposes shall be designed, constructed and installed to conform to good engineering practice appropriate to the circumstances such as described in,
  - (a) the ASHRAE Handbooks,
  - (b) ASPE Data Books, or
  - (c) CAN/CSA-B128.1, “Design and Installation of Non-Potable Water Systems”.



## Part 8

# Sewage Systems

### Section 8.1. General

#### 8.1.1. Scope

##### 8.1.1.1. Scope

- (1) The scope of this Part shall be as described in Subsection 1.1.2. of Division A.

##### 8.1.1.2. Definitions

- (1) In this Part,

*Soil* means in-situ, naturally occurring, unconsolidated mineral or organic material, at the earth's surface that is at least 100 mm thick and capable of supporting plant growth, and includes material compacted or cemented by soil forming processes, but does not include displaced materials such as gravel dumps, mine spoils, or like deposits.

#### 8.1.2. Application

##### 8.1.2.1. Classification of Systems

- (1) All *sewage systems* shall be classed as one of the following:
  - (a) Class 1 — a chemical toilet, an incinerating toilet, a recirculating toilet, a self-contained portable toilet and all forms of privy including a *portable privy*, an *earth pit privy*, a *pail privy*, a *privy vault* and a composting toilet system,
  - (b) Class 2 — a *greywater* system,
  - (c) Class 3 — a cesspool,
  - (d) Class 4 — a *leaching bed* system, or
  - (e) Class 5 — a system that requires or uses a *holding tank* for the retention of *hauled sewage* at the site where it is produced prior to its collection by a *hauled sewage system*.

##### 8.1.2.2. Operation and Maintenance

- (1) Operation and maintenance of *sewage systems* shall comply with Section 8.9.

#### 8.1.3. Limitations

##### 8.1.3.1. Discharge

- (1) Except as provided in Sentences (2) to (6), the *sewage system* shall be designed and *constructed* to receive only *sanitary sewage* of domestic origin. (See Appendix A.)

- (2) Where laundry waste is not more than 20% of the total daily design *sanitary sewage* flow, it may discharge to a *sewage system*.
- (3) Where industrial process waste water is treated to the contaminant levels found in domestic *sanitary sewage*, it may discharge to a *leaching bed* provided the *treatment unit* and *sewage system* are designed in accordance with good engineering practice. (See Appendix A.)
- (4) Where kitchen waste water from a restaurant has passed through an operating grease *interceptor*, it may discharge to a *leaching bed* provided the *sewage system* has been designed in accordance with good engineering practice.
- (5) Waste water from a kitchen equipped with a garbage grinder may be directed to the *sewage system* provided the system has been designed to accept such waste water.
- (6) Water softener and iron filter discharge may be directed to the *sewage system* provided the system has been designed to accept such discharges.
- (7) *Storm sewage* shall not be discharged into a *sewage system*.
- (8) The *interceptor* required in Sentence (4) shall,
- (a) have a minimum flow rate as required by Sentence 7.4.4.3.(8) using a 60 second drain down time, and
  - (b) conform to,
    - (i) CSA B481.1, “Testing and Rating of Grease Interceptors Using Lard”, or
    - (ii) CSA B481.2, “Testing and Rating of Grease Interceptors Using Oil”.

r5  
r5

## Section 8.2. Design Standards

### 8.2.1. General Requirements

#### 8.2.1.1. Scope

- (1) This Subsection applies to the design of *sewage systems*.

#### 8.2.1.2. Site Evaluation

- (1) A site evaluation shall be conducted on every site where a new or replacement *sewage system* is to be installed. (See Appendix A.)
- (2) The *percolation time* shall be determined by,
- (a) conducting percolation tests, or
  - (b) classifying the *soil* according to one of the following methods,
    - (i) the Unified Soil Classification System as described in MMAH Supplementary Standard SB-6, “Percolation Time and Soil Descriptions”, or
    - (ii) the Soil Texture Classification as described in Chapter 3 of USDA, “Soil Survey Manual”.
- (See Appendix A.)
- (3) Where the *percolation time* is determined by a percolation test, there shall be a minimum of 3 locations selected, suitably spaced to accurately evaluate the *leaching bed* area, with the highest *percolation time* of the tests being used. (See Appendix A.)

$$A = \frac{QT}{850}$$

where,

- A = the area of contact in square metres between the base of the filter medium and the underlying *soil*,
- Q = the total daily design *sanitary sewage* flow in litres, and
- T = the lesser of 50 and the *percolation time* of the underlying *soil*.

(7) The stone layer required by Clause 8.7.3.3.(1)(c) shall be not less than 900 mm above the *high ground water table*, rock or *soil* with a *percolation time* of more than 50 minutes.

## **8.7.6. Shallow Buried Trench**

### **8.7.6.1. Construction Requirements** (See Appendix A.)

- (1) The *treatment unit* used in conjunction with a *leaching bed constructed as a shallow buried trench* shall provide an *effluent* quality that does not exceed the maximum concentrations set out opposite a Level IV *treatment unit* in Columns 2 and 3 of Table 8.6.2.2.
- (2) The *effluent* shall be distributed through a *pressurized distribution system* having a pressure head of not less than 600 mm when measured to the most distant point from the pump.
- (3) The pump chamber shall be sized to provide sufficient storage volume so that the *effluent* is evenly dosed on an hourly basis over a 24-hour period.
- (4) A *shallow buried trench* shall not be *constructed* unless the *soil* or *leaching bed fill* is sufficiently dry to resist compaction and smearing during excavation.
- (5) Every *chamber* shall be as wide as the *shallow buried trench* in which it is contained, and the cross-sectional height of the *chamber* at its centre point shall not be less than half the width of the trench.
- (6) Every *chamber* shall contain only one *pressurized distribution pipe*.

## **8.7.7. Type A Dispersal Beds**

### **8.7.7.1. Construction Requirements**

- (1) The *treatment unit* used in conjunction with a *leaching bed constructed as a Type A dispersal bed* shall provide an *effluent* quality that does not exceed the maximum concentrations set out opposite a Level IV *treatment unit* in Columns 2 and 3 of Table 8.6.2.2.
- (2) A *Type A dispersal bed* shall be backfilled with *leaching bed fill* so as to ensure that, after the *leaching bed fill* settles, the surface of the *leaching bed* will not form any depressions.
- (3) The combined thickness of the sand layer and the stone layer of a *Type A dispersal bed* shall not be less than 500 mm.
- (4) Except as provided in Sentence (5), the sand layer shall,
  - (a) be comprised of sand that has,
    - (i) a *percolation time* of at least 6 and not more than 10 min, and
    - (ii) not more than 5% fines passing through a 0.074 mm (No. 200) sieve,
  - (b) have a minimum thickness of 300 mm, and

- (c) have an area that is not less than the lesser of,
- the area of the stone layer determined in accordance with Sentence (6), and
  - the value determined by the formula,

$$A = \frac{QT}{850}$$

where,

- A = the area of contact in square metres between the base of the sand and the underlying *soil*,
- Q = the total daily design *sanitary sewage* flow in litres, and
- T = the lesser of 50 and the *percolation time* of the underlying *soil*.

(5) Where the underlying *soil* has a *percolation time* of more than 15 min, the sand layer referred to in Sentence (4) shall,

- extend to at least 15 m beyond the perimeter of the *treatment unit*, or *distribution pipes* if utilized, in any direction that the *effluent* entering the *soil* will move horizontally, and
- have an area that is not less than the value determined by the formula,

$$A = \frac{QT}{400}$$

where,

- A = the area of contact in square metres between the base of the sand and the underlying *soil*, or *leaching bed fill* if utilized,
- Q = the total daily design *sanitary sewage* flow in litres, and
- T = the lesser of 50 and the *percolation time* of the underlying *soil*.

e<sub>3</sub> (See Appendix A.)

- (6) The stone layer shall,
- be rectangular in shape with the long dimension parallel to the site contours,
  - have a minimum thickness of 200 mm,
  - be protected in the manner described in Sentence 8.7.3.3.(2), and
  - be *constructed* such that the bottom of the stone layer is at least 600 mm above the *high ground water table*, rock or *soil* with a *percolation time* of 1 min or less or greater than 50 min.
  - have a minimum area not less than the value determined by the formula,

$$A = Q/B$$

where,

- A = the area of the stone layer in square metres,
- B = the following amount,
- 50, if the total daily design *sanitary sewage* flow exceeds 3 000 litres, or
  - 75, if the total daily design *sanitary sewage* flow does not exceed 3 000 litres, and
- Q = the total daily design *sanitary sewage* flow in litres.

(7) *Leaching bed fill* with a *percolation time* not exceeding 15 min may be used to satisfy the vertical separation requirements of Clause (6)(d), provided that the *leaching bed fill* conforms to the requirements specified in Sentence (5) regardless of the *percolation time* of the underlying *soil*.

e<sub>3</sub> (8) The *effluent* shall be evenly distributed within the stone layer to within 600 mm of the perimeter of the stone layer. (See Appendix A.)

(9) The stone layer shall not be located closer than the minimum horizontal distances set out in Table 8.2.1.6.B. and these distances shall be increased when required by Sentence 8.7.4.2.(11).

### 8.9.2.5. Class 5 Sewage Systems

- (1) Every Class 5 *sewage system* shall be operated in accordance with the agreement referred to in Sentence 8.8.1.2.(2).
- (2) No Class 5 *sewage system* shall be operated once it is filled with *sanitary sewage* until such time as the *sanitary sewage* is removed from the *sewage system*.

## 8.9.3. Maintenance

### 8.9.3.1. Scope

- (1) The requirements of this Subsection are in addition to the requirements of Subsection 8.9.1.

### 8.9.3.2. General

- (1) Every *sewage system* shall be maintained so that,
  - (a) the *construction* of the *sewage system* remains in accordance with,
    - (i) the basis on which the *construction* and use of the *sewage system* was approved or required under the Act or predecessor legislation, as the case may be, and
    - (ii) the requirements of the manufacturer of the *sewage system*, and
  - (b) all components of the *sewage system* function in their intended manner.
- (2) The land in the vicinity of a *sewage system* shall be maintained in a condition that will not cause damage to, or impair the functioning of, the *sewage system*.

### 8.9.3.3. Interceptors

- r<sub>5</sub> (1) Every grease *interceptor* referred to in Article 8.1.3.1. shall be maintained in accordance with CSA B481.4, “Maintenance of Grease Interceptors”.

### 8.9.3.4. Class 4 Sewage Systems

- (1) *Septic tanks* and other *treatment units* shall be cleaned whenever sludge and scum occupy one-third of the *working capacity* of the tank.

### 8.9.3.5. Pressurized Distribution Systems

- (1) The pressure head at the furthest point from the pump in all *distribution pipes* shall be checked for compliance with Articles 8.7.6.1. and 8.7.8.2. and the design specification at least every 36 months.



- r<sub>5</sub>
- (4) For flat insulating concrete form walls not exceeding 2 storeys in *building height*, and having a maximum floor to floor height of 3 m, in *buildings* of light-frame construction containing only a single *dwelling unit*, the concrete and reinforcing shall comply with Part 4 or,
    - (a) the concrete shall conform to CSA A23.1, “Concrete Materials and Methods of Concrete Construction”, with a maximum aggregate size of 19 mm, and
    - (b) the reinforcing shall,
      - (i) conform to CSA G30.18, “Carbon Steel Bars for Concrete Reinforcement”,
      - (ii) have a minimum specified yield strength of 400 MPa, and
      - (iii) be lapped a minimum of 450 mm for 10M bars and 650 mm for 15M bars.

### 9.3.1.2. Cement

- (1) Cement shall meet the requirements of CAN/CSA-A3001, “Cementitious Materials for Use in Concrete”.

### 9.3.1.3. Concrete in Contact With Sulfate Soil

- (1) Concrete in contact with sulfate *soil*, which is deleterious to normal cement, shall conform to the requirements in Clause 4.1.1.6. of CSA A23.1, “Concrete Materials and Methods of Concrete Construction”.

### 9.3.1.4. Aggregates

- (1) Aggregates shall,
  - (a) consist of sand, gravel, crushed rock, crushed air-cooled blast furnace slag, expanded shale or expanded clay conforming to CSA A23.1, “Concrete Materials and Methods of Concrete Construction”, and
  - (b) be clean, well-graded and free of injurious amounts of organic and other deleterious material.

### 9.3.1.5. Water

- (1) Water shall be clean and free of injurious amounts of oil, organic matter, sediment or any other deleterious material.

### 9.3.1.6. Compressive Strength

- (1) Except as provided elsewhere in this Part, the compressive strength of unreinforced concrete after 28 days shall be not less than,
  - (a) 32 MPa for garage floors, carport floors and all exterior flatwork,
  - (b) 20 MPa for interior floors other than those for garages and carports, and
  - (c) 15 MPa for all other applications.
- (2) Concrete used for garage and carport floors and exterior steps shall have air entrainment of 5 to 8%.

### 9.3.1.7. Concrete Mixes

- (1) For site-batched concrete, the concrete mixes described in Table 9.3.1.7. shall be considered acceptable if the ratio of water to cementing materials does not exceed,
  - (a) 0.45 for garage floors, carport floors and all exterior flatwork,
  - (b) 0.65 for interior floors other than those for garages and carports, and
  - (c) 0.70 for all other applications.
- (2) The size of aggregate in unreinforced concrete mixes referred to in Sentence (1) shall not exceed,
  - (a) 1/5 the distance between the sides of vertical forms, or
  - (b) 1/3 the thickness of flatwork.

Table 9.3.1.7.  
Concrete Mixes  
Forming Part of Sentence 9.3.1.7.(1)

Maximum Size of Coarse Aggregate, mm	Materials, volume					
	Cement		Fine Aggregate (damp average coarse sand)		Coarse Aggregate (gravel or crushed stone)	
	Parts	L <sup>(1)</sup>	Parts	L	Parts	L
14	1	28	1.75	49	2	56
20	1	28	1.75	49	2.5	70
28	1	28	2	56	3	84
40	1	28	2	56	3.5	98
Column 1	2	3	4	5	6	7

Notes to Table 9.3.1.7.:

(1) A 40 kg bag of cement contains 28 L.

### 9.3.1.8. Admixtures

- †5 (1) Admixtures shall conform to ASTM C260 / C260M, “Air-Entraining Admixtures for Concrete”, or ASTM C494 / C494M, “Chemical Admixtures for Concrete”, as applicable.

### 9.3.1.9. Cold Weather Requirements

- (1) When the air temperature is below 5°C, concrete shall be,
- kept at a temperature of not less than 10°C or more than 25°C while being mixed and placed, and
  - maintained at a temperature of not less than 10°C for 72 h after placing.
- (2) No frozen material or ice shall be used in concrete described in Sentence (1).

## 9.3.2. Lumber and Wood Products

### 9.3.2.1. Grade Marking

- (1) Lumber for joists, rafters, trusses and beams and for the uses listed in Table 9.3.2.1. shall be identified by a grade stamp to indicate its grade as determined by the NLGA, “Standard Grading Rules for Canadian Lumber”.  
(See Appendix A.)



- (d) Use Category 4.1, where,
    - (i) the wood member is used in contact with the ground,
    - (ii) the wood member is used in contact with fresh water, or
    - (iii) the vertical clearance between the wood element and the finished ground level is less than 150 mm and the wood elements are not separated from permeable supporting materials by a moisture barrier, or
  - (e) Use Category 4.2, where the wood member is used in critical structural components, including permanent wood *foundations*.
- (7) Where wood is protected in accordance with Use Category 1 or Use Category 2 using an inorganic boron preservative, the wood shall be,
- (a) protected from direct exposure to water during and after the completion of construction, and
  - (b) separated from permeable supporting materials by a moisture barrier that is resistant to all expected mechanisms of deterioration in the service environment if the vertical clearance to the ground is less than 150 mm.
- (8) Wood that is required by this Article to be treated to resist termites or decay shall be identified by a mark to indicate the type of preservative used and conformance to the relevant required Use Category.

### **9.3.3. Metal**

#### **9.3.3.1. Sheet Metal Thickness**

- (1) Minimum thicknesses for sheet metal material required in this Part refer to the actual minimum base metal thicknesses measured at any point of the material, and in the case of galvanized steel described in Sentence 9.3.3.2.(1), include the thickness of the galvanizing coating unless otherwise indicated.

#### **9.3.3.2. Galvanized Sheet Steel**

- (1) Where sheet steel is required to be galvanized, it shall be metallic-coated with zinc or an alloy of 55% aluminum-zinc meeting the requirements of,
- r<sub>5</sub> (a) ASTM A653 / A653M, “Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process”, or
- (b) ASTM A792 / A792M, “Sheet Steel, 55% Aluminum-Zinc Alloy-Coated by the Hot Dip Process”.
- (2) Where galvanized sheet steel is intended for use in locations exposed to the weather or as a flashing material, it shall have a zinc coating not less than the G90 (Z275) coating designation or an aluminum-zinc alloy coating not less than the AZM150 coating designation, as referred to in Sentence (1).

## **Section 9.4. Structural Requirements**

### **9.4.1. Structural Design Requirements and Application Limitations**

#### **9.4.1.1. General** (See Appendix A.)

- (1) Subject to the application limitations defined elsewhere in this Part, structural members and their connections shall,
  - (a) conform to requirements provided elsewhere in this Part,
  - (b) be designed according to good engineering practice such as provided in the CWC, “Engineering Guide for Wood Frame Construction”, or
  - (c) be designed according to Part 4 using the loads and deflection and vibration limits specified in,
    - (i) this Part, or
    - (ii) Part 4.

r<sub>5</sub> (2) Where floor framing is designed in accordance with Clause (1)(b) or (c) and where supporting wall framing and fastenings, or footings, are designed according to Clause (1)(a), the specified *live load* on the floor according to Table 4.1.5.3. shall not exceed 2.4 kPa.

(3) Location-specific information for structural design, including snow and wind loads and seismic spectral response accelerations, shall be determined according to MMAH Supplementary Standard SB-1, “Climatic and Seismic Data”. (See Appendix A.)

## 9.4.2. Specified Loads

### 9.4.2.1. Application

(1) This Subsection applies to light-frame construction whose wall, floor and roof planes are generally comprised of frames of small repetitive structural members, and where,

- (a) the roof and wall planes are clad, sheathed or braced on at least one side,
- (b) the small repetitive structural members are spaced not more than 610 mm o.c.,
- (c) the clear span of any structural member does not exceed 12.20 m,
- (d) the maximum deflection of the structural roof members conforms to Article 9.4.3.1.,
- (e) the maximum total roof area, notwithstanding any separation of adjoining *buildings* by *firewalls*, is 4 550 m<sup>2</sup>, and
- (f) for flat roofs, there are no significant obstructions on the roof, such as parapet walls, spaced closer than the distance calculated by,

$$D_o = 10(H_o - 0.8 S_s / \gamma)$$

where,

$D_o$  = minimum distance between obstructions, m,

$H_o$  = height of the obstruction above the roof, m,

$S_s$  = ground snow load, kPa, and

$\gamma$  = unit weight of snow, kN/m<sup>3</sup>.

(See Appendix A.)

### 9.4.2.2. Specified Snow Loads

(1) Except as provided in Sentences (2) and (3), specified snow loads shall be not less than those calculated using the following formula:

$$S = C_b \cdot S_s + S_r$$

where,

$S$  = specified snow load,

$C_b$  = basic snow load roof factor, which is 0.45 where the entire width of a roof does not exceed 4.3 m and 0.55 for all other roofs,

$S_s$  = 1-in-50 year ground snow load in kPa, determined according to MMAH Supplementary Standard SB-1, “Climatic and Seismic Data”, and

$S_r$  = associated 1-in-50 year rain load in kPa, determined according to MMAH Supplementary Standard SB-1, “Climatic and Seismic Data”.

(2) In no case shall the specified snow load be less than 1 kPa.

- (2) The maximum area of individual panes of glass for doors shall conform to Table 9.6.1.3.

Table 9.6.1.3.  
Maximum Glass Area for Doors<sup>(2)</sup>  
Forming Part of Sentence 9.6.1.3.(2)

Glass Thickness, mm	Maximum Glass Area, m <sup>2</sup>						
	Type of Glass						
	Annealed	Annealed Multiple-Glazed Factory-Sealed Units	Laminated	Wired	Heat Strengthened	Fully Tempered	Fully Tempered Multiple-Glazed Factory-Sealed Units
3	0.50	0.70	(1)	(1)	1.00	1.00	2.00
4	1.00	1.50	(1)	(1)	1.50	4.00	4.00
5	1.50	1.50	(1)	(1)	1.50	No limit	No limit
6	1.50	1.50	1.20	1.00	1.50	No limit	No limit
Column 1	2	3	4	5	6	7	8

Notes to Table 9.6.1.3.:

- (1) Not generally available.  
(2) See Appendix A.

#### 9.6.1.4. Types of Glass and Protection of Glass

- (1) Glass sidelights greater than 500 mm wide that could be mistaken for doors, glass in storm doors and glass in sliding doors within or at every entrance to a *dwelling unit* and in public areas shall be,
- safety glass of the tempered or laminated type conforming to CAN/CGSB-12.1-M, “Tempered or Laminated Safety Glass”, or
  - wired glass conforming to CAN/CGSB-12.11-M, “Wired Safety Glass”.
- (2) Except as provided in Sentence (4), glass in entrance doors to *dwelling units* and in public areas, other than the entrance doors described in Sentence (1), shall be safety glass or wired glass of the type described in Sentence (1) where the glass area exceeds 0.5 m<sup>2</sup> and extends to less than 900 mm from the bottom of the door.
- (3) Except as provided in Sentence (4), transparent panels that could be mistaken as a *means of egress* shall be protected by barriers or railings.
- (4) Sliding glass *partitions* that separate a *public corridor* from an adjacent *occupancy* and that are open during normal working hours need not conform to Sentences (2), (3) and (5), except that such *partitions* shall be suitably marked to indicate their existence and position.
- (5) Except as provided in Sentence (4), every glass or transparent door accessible to the public shall be equipped with hardware, bars or other permanent fixtures designed so that the existence and position of such doors is readily apparent.
- (6) Glass, other than safety glass, shall not be used for a shower or bathtub enclosure.

## Section 9.7. Windows, Doors and Skylights

### 9.7.1. General

#### 9.7.1.1. Application

- (1) This Section applies to,
  - (a) windows, doors and skylights separating *conditioned space* from unconditioned space or the exterior, and
  - (b) main entrance doors.
- (2) For the purpose of this Section, the term “skylight” refers to unit skylights, roof windows and tubular daylighting devices.
- (3) For the purpose of this Section, the term “doors” includes glazing in doors and sidelights for doors.

### 9.7.2. Required Windows, Doors and Skylights

#### 9.7.2.1. Entrance Doors

- (1) A door shall be provided at each entrance to a *dwelling unit*.
- (2) Main entrance doors to *dwelling units* shall be provided with,
  - (a) a door viewer or transparent glazing in the door, or
  - (b) a sidelight.

#### r5 9.7.2.2. Other Requirements for Windows, Doors and Skylights

- (1) Minimum sizes of doorways and doors within a *barrier-free* path of travel shall conform to Section 9.5.
- (2) The protection of window and door openings against persons falling through the window or door opening shall conform to Article 9.8.8.1.
- (3) Properties of windows and doors within *exits* shall conform to Section 9.9.
- (4) Windows and doors installed to provide the required *means of egress* from bedrooms shall conform to Subsection 9.9.10.
- (5) The location and protection of windows, doors and skylights in order to control the spread of fire shall conform to Subsection 9.10.12.
- (6) Doors between *dwelling units* and attached garages shall conform to Article 9.10.13.15.
- (7) The surface *flame-spread rating* for doors and skylights shall conform to Article 9.10.17.1.
- (8) Windows and doors installed to provide the required access to a *building* for firefighting purposes shall conform to Subsection 9.10.20.
- (9) Windows and skylights installed to provide required non-heating season ventilation shall conform to Article 9.32.2.1.

**9.8.7.4. Height of Handrails** (See Appendix A.)

- (1) The height of handrails on stairs and ramps shall be measured vertically from the top of the handrail to,
  - (a) a straight line drawn tangent to the tread nosings of the stair served by the handrail, or
  - (b) the surface of the ramp, floor or landing served by the handrail.
- (2) Except as provided in Sentences (3) and (4), the height of handrails on stairs and ramps shall be,
  - (a) not less than 865 mm, and
  - (b) not more than 965 mm.
- (3) Where *guards* are required, handrails required on landings shall be not more than 1 070 mm in height.
- (4) Handrails installed in addition to required handrails need not comply with Sentence (2).

**9.8.7.5. Ergonomic Design**

- (1) A clearance of not less than 50 mm shall be provided between a handrail and any surface behind it.
- (2) All handrails shall be constructed so as to be continually graspable along their entire length with no obstruction on or above them to break a handhold, except where the handrail is interrupted by newels at changes in direction. (See Appendix A.)

**9.8.7.6. Projections into Stairs and Ramps**

- (1) Handrails and projections below handrails, including handrail supports and stair stringers, shall not project more than 100 mm into the required width of a stair or ramp.

**9.8.7.7. Design and Attachment of Handrails** (See Appendix A.)

- (1) Handrails and any *building* element that could be used as a handrail shall be designed and attached in such a manner as to resist,
  - (a) a concentrated load at any point of not less than 0.9 kN, and
  - (b) for handrails other than those serving a single *dwelling unit*, a uniformly distributed load of 0.7 kN/m.
- (2) Where a handrail serving a single *dwelling unit* is attached to wood studs or blocking, the attachment shall be deemed to comply with Sentence (1), where,
  - (a) the attachment points are spaced not more than 1.2 m apart,
  - (b) the first attachment point at either end is located not more than 300 mm from the end of the handrail, and
  - (c) the fasteners consist of no fewer than two wood screws at each point, penetrating not less than 32 mm into solid wood.

**9.8.8. Guards**
**9.8.8.1. Required Guards** (See Appendix A.)

- (1) Except as provided in Sentences (2) and (3), every surface to which access is provided for other than maintenance purposes, including but not limited to flights of steps and ramps, exterior landings, porches, balconies, *mezzanines*, galleries and raised walkways, shall be protected by a *guard* on each side that is not protected by a wall for the length, where,
  - (a) there is a difference in elevation of more than 600 mm between the walking surface and the adjacent surface, or
  - (b) the adjacent surface within 1.2 m from the walking surface has a slope of more than 1 in 2.

- (2) *Guards* are not required,
  - (a) at loading docks,
  - (b) at floor pits in *repair garages*, or
  - (c) where access is provided for maintenance purposes only.
- (3) When an interior stair has more than two risers or an interior ramp rises more than 400 mm, the sides of the stair or ramp and the landing or floor level around the stairwell or ramp shall be protected by a *guard* on each side that is not protected by a wall.
- (4) Doors in *buildings of residential occupancy*, where the finished floor on one side of the door is more than 600 mm above the floor or other surface or ground level on the other side of the door, shall be protected by,
  - (a) a *guard* in accordance with this Subsection, or
  - (b) a mechanism capable of controlling the free swinging or sliding of the door so as to limit any clear unobstructed opening to not more than 100 mm.
- R5 (5) Except as provided in Sentence (6), openable windows in *buildings of residential occupancy* shall be protected by,
  - (a) a *guard* in accordance with this Subsection, or
  - (b) a mechanism capable of controlling the free swinging or sliding of the openable part of the window so as to limit any clear unobstructed opening to a size that will prevent the passage of a sphere having a diameter more than 100 mm.
 (See Appendix A.)
- R5 (6) Windows need not be protected in accordance with Sentence (5), where,
  - (a) the window serves a *dwelling unit* that is not located above another *suite*,
  - (b) the only opening having greater dimensions than those allowed by Clause (5)(b) is a horizontal opening at the top of the window,
  - (c) the top surface of the window sill is located more than 480 mm above the finished floor on one side of the window, or
  - (d) the window is located in a room or space with the finished floor described in Clause (c) located less than 1 800 mm above the floor or ground on the other side of the window.
- (7) Except as provided in Sentence (8), glazing installed over stairs, ramps and landings that extends to less than 1 070 mm above the surface of the treads, ramp or landing shall be,
  - (a) protected by *guards* in accordance with this Subsection, or
  - (b) non-openable and designed to withstand the specified lateral loads for *guards* as provided in Article 4.1.5.14.
- (8) In *dwelling units*, glazing installed over stairs, ramps and landings that extends to less than 900 mm above the surface of the treads, ramp or landing shall be,
  - (a) protected by *guards* in accordance with this Subsection, or
  - (b) non-openable and designed to withstand the specified lateral loads for *guards* as provided in Article 4.1.5.14.
- (9) Glazing installed in public areas that extends to less than 1 000 mm from the floor and is located above the second storey in *buildings of residential occupancy* shall be,
  - (a) protected by *guards* in accordance with this Subsection, or
  - (b) non-openable and designed to withstand the specified lateral loads for *guards* as provided in Article 4.1.5.14.

### 9.8.8.2. Loads on Guards (See Appendix A.)

- (1) Except as provided in Sentence (5), *guards* shall be designed to resist the specified loads prescribed in Table 9.8.8.2.

## **9.8.9. Construction**

### **9.8.9.1. Loads on Stairs and Ramps**

- (1) Except as required in Articles 9.8.9.4. and 9.8.9.5., stairs and ramps shall be designed for strength and rigidity under uniform loading criteria to support specified loads of,
- (a) 1.9 kPa for stairs and ramps serving a single *dwelling unit*, and
  - (b) 4.8 kPa for other stairs and ramps.

### **9.8.9.2. Exterior Concrete Stairs**

- (1) Exterior concrete stairs with more than two risers and two treads shall be,
  - (a) supported on unit masonry or concrete walls or piers not less than 150 mm in cross-section, or
  - (b) cantilevered from the main *foundation* wall.
- (2) Stairs described in Sentence (1), when cantilevered from the *foundation* wall, shall be constructed and installed in conformance with Subsection 9.8.10.
- (3) The depth below ground level for *foundations* for exterior steps shall conform to the requirements in Section 9.12.

### **9.8.9.3. Exterior Wood Steps**

- (1) Exterior wood steps shall not be in direct contact with the ground unless suitably treated with a wood preservative.

### **9.8.9.4. Wooden Stair Stringers**

- (1) Wooden stair stringers shall,
  - (a) have a minimum effective depth of 90 mm, measured perpendicularly to the bottom of the stringer at the point of minimum cross-section, and an overall depth of not less than 235 mm,
  - (b) be supported and secured top and bottom,
  - (c) be not less than 25 mm actual thickness if supported along their length and 38 mm actual thickness if unsupported along their length, and
  - (d) except as permitted in Sentence (2), be spaced not more than 900 mm o.c. for stairs serving not more than one *dwelling unit*, and 600 mm o.c. in other stairs.
- (2) For stairs serving not more than one *dwelling unit*, where risers support the front portion of the tread, the space between stringers shall be not more than 1 200 mm.

### **9.8.9.5. Treads**

- (1) Stair treads of lumber, plywood or O-2 grade OSB within *dwelling units* shall be not less than 25 mm actual thickness, except that if open risers are used and the distance between stringers exceeds 750 mm, the treads shall be not less than 38 mm actual thickness.
- (2) Stair treads of plywood or OSB, that are not continuously supported by the riser shall have their face grain or direction of face orientation at right angles to the stringers.

### **9.8.9.6. Finish for Treads, Landings and Ramps**

- r4 (1) Except as required by Sentence (5), the finish for treads, landings and ramps shall be,
- (a) wear-resistant,
  - (b) slip-resistant, and
  - (c) smooth, even and free from open defects.

- (2) The finish for treads, landings and ramps in *dwelling units*, including those from an attached garage serving a single *dwelling unit*, shall be deemed to comply with Sentence (1) where these treads, landings or ramps are finished with,
- (a) hardwood,
  - (b) vertical grain softwood,
  - (c) resilient flooring,
  - (d) low-pile carpet,
  - (e) mat finish ceramic tile,
  - (f) concrete, or
  - (g) for stairs to unfinished *basements* and to garages, plywood.
- R4** (3) Stairs and ramps, except those serving a single *dwelling unit*, *service rooms* or *service spaces*, shall have a colour contrast or a distinctive visual pattern to demarcate,
- (a) the leading edge of the treads,
  - (b) the leading edge of the landing, and
  - (c) the beginning and end of a ramp.
- R5** (4) Except for stairs serving a single *dwelling unit*, *service rooms* or *service spaces*, a tactile attention indicator conforming to Article 3.8.3.18. shall be installed,
- (a) at the top of the stairs, starting one tread depth back from the edge of the top stair, and
  - (b) at the leading edge of landings where a doorway opens onto stairs, starting one tread depth back from the edge of the landing.
- R4** (5) Treads and landings of interior and exterior stairs and ramps, other than those within *dwelling units*, shall have a slip-resistant finish or be provided with slip-resistant strips that extend not more than 1 mm above the surface.

## 9.8.10. Cantilevered Precast Concrete Steps

### 9.8.10.1. Design

- (1) Exterior concrete steps and their anchorage system that are cantilevered from a *foundation* wall shall be designed and installed to support the loads to which they may be subjected.

### 9.8.10.2. Anchorage

- (1) Cantilevered concrete steps referred to in Article 9.8.10.1. shall be anchored to concrete *foundation* walls at least 200 mm thick.

### 9.8.10.3. Prevention of Damage Due to Frost

- (1) Suitable precautions shall be taken during backfilling and grading operations to ensure that subsequent freezing of the *soil* will not cause uplift forces on the underside of cantilevered concrete steps to the extent that the steps or the walls to which they are attached will be damaged.

## Section 9.9. Means of Egress

### 9.9.1. General

#### 9.9.1.1. Application

- (1) Stairways, handrails and *guards* in a *means of egress* shall conform to the requirements in Section 9.8. as well as to the requirements in this Section.



- (2) Where there is no floor assembly above, the *fire-resistance rating* required in Sentence (1) shall not be less than that required by Subsection 9.10.8. for the floor assembly below, but in no case shall the *fire-resistance rating* be less than 45 min.
- (3) A *fire separation* common to two *exits* shall be smoke-tight and not be pierced by doorways, duct work, piping or any other opening that may affect the continuity of the separation.
- (4) A *fire separation* that separates an *exit* from the remainder of the *building* shall have no openings except those for electrical wiring, *noncombustible* conduit and *noncombustible* piping that serve only the *exit*, and for standpipes, sprinkler piping, *exit* doorways and wired glass and glass block permitted in Article 9.9.4.3.
- (5) The requirements in Sentence (1) do not apply to an exterior *exit* passageway provided the passageway has at least 50 percent of its exterior sides open to the outdoors and is served by an *exit* stair at each end of the passageway.

### **9.9.4.3. Wired Glass or Glass Block**

- (1) This Article applies to wired glass in doors, and wired glass or glass block in sidelights, where these are installed in *fire separations* between *exit* enclosures and *floor areas*.
- (2) Except as provided in Sentence (3), the combined area of glazing in doors and sidelights shall not exceed 0.8 m<sup>2</sup>.
- (3) Where an *exit* enclosure connects with a *floor area* through an enclosed vestibule or corridor separated from the *floor area* by *fire separations* having not less than a 45 min *fire-resistance rating*, the glazed areas described in Sentence (1) need not be limited as required in Sentence (2).

### **9.9.4.4. Openings Near Unenclosed Exit Stairs and Ramps**

- (1) Where an unenclosed exterior *exit* stair or ramp provides the only *means of egress* from a *suite*, and is exposed to fire from openings in the exterior walls of another *fire compartment*, the openings in the exterior walls of the *building* shall be protected with wired glass in fixed steel frames or glass block conforming to Articles 9.10.13.5. and 9.10.13.7. when the openings in the exterior walls of the *building* are within 3 m horizontally and less than 10 m below or less than 5 m above the *exit* stair or ramp.

### **9.9.4.5. Openings in Exterior Walls of Exits**

- (1) Either openings in the exterior walls of an *exit* or openings in adjacent exterior walls of the *building* the *exit* serves shall be protected with wired glass in fixed steel frames or glass block installed in accordance with Articles 9.10.13.5. and 9.10.13.7., where,
  - (a) the *exit* enclosure has exterior walls that intersect the exterior walls of the *building* at an angle of less than 135° measured on the outside of the *building*, and
  - (b) the openings in the exterior walls of the *building* are within 3 m horizontally and less than 2 m above the openings in the exterior walls of the *exit*.
 (See Appendix A.)

### **9.9.4.6. Openings Near Exit Doors**

- (1) This Article applies to,
  - (a) *exit* doors serving other than single *dwelling units*, and
  - (b) *exit* doors serving single *dwelling units* where there is no second and separate *exit* from the *dwelling unit*.
- (2) Where an exterior *exit* door described in Sentence (1) in one *fire compartment* is within 3 m horizontally of an *unprotected opening* in another *fire compartment* and the exterior walls of these *fire compartments* intersect at an exterior angle of less than 135°, the opening shall be protected with wired glass in fixed steel frames or glass block conforming to

Articles 9.10.13.5. and 9.10.13.7. or with a rated *closure* conforming to Table 9.10.13.1. with respect to the rating of the *fire separation* between the two compartments.

### 9.9.4.7. Stairways in Group D or E Buildings

- (1) Notwithstanding the requirements of Sentences 9.9.4.2.(1), 9.9.8.2.(1) and Article 9.10.9.5., where a *suite* of Group D or E *occupancy* is located partly on the *first storey* and partly on the second *storey* or partly on the second *storey* and partly on the third *storey*, stairways serving that *suite* need not be constructed as *exit* stairs, provided,
- (a) the *building* is not greater than three *storeys* in *building height*,
  - (b) the *suite* is separated from other *occupancies* by a *fire separation* having a *fire-resistance rating* of not less than 45 min,
  - (c) the area occupied by the *suite* is not greater than 100 m<sup>2</sup> per *storey*, other than the *exit level storey*,
  - (d) the maximum travel distance from any point in the *suite* to an exterior *exit* is not greater than 25 m,
  - (e) the floor assemblies have a *fire-resistance rating* of not less than 45 min or are of *noncombustible construction*,
  - (f) the *basement* and *first storey* are separated by a *fire separation* having a *fire-resistance rating* of not less than 45 min, and
  - (g) a *smoke alarm* is installed on each floor of the *suite*, including the *basement*, in accordance with Subsection 9.10.19.

r<sub>5</sub> (2) Reserved.

## 9.9.5. Obstructions and Hazards in Means of Egress

### 9.9.5.1. Application

(1) This Subsection applies to obstructions and hazards in every *means of egress* except those within a *dwelling unit* or serving a single *dwelling unit*.

### 9.9.5.2. Occupancies in Corridors

(1) Where a corridor contains an *occupancy*, the *occupancy* shall not reduce the unobstructed width of the corridor to less than the required width of the corridor.

### 9.9.5.3. Obstructions in Public Corridors

(1) Except as permitted in Sentence (2), obstructions located within 1 980 mm of the floor shall not project horizontally more than 100 mm into *exit* passageways, corridors used by the public or *public corridors* in a manner that would create a hazard for persons with no or low vision travelling adjacent to walls.

(2) The horizontal projection of an obstruction in Sentence (1) is permitted to exceed 100 mm where the obstruction extends to less than 680 mm above the floor.

### 9.9.5.4. Obstructions in Exits

(1) Except as permitted in Subsection 9.9.6. and Article 9.8.7.6., no fixture, turnstile or construction shall project within the required width of an *exit*.

### 9.9.5.5. Obstructions in Means of Egress

(1) No obstructions such as posts or turnstiles shall be placed so as to restrict the width of a required *means of egress* from a *floor area* or part of a *floor area* to less than 750 mm unless an alternate unobstructed *means of egress* is provided adjacent to and plainly visible from the restricted egress.

## 9.9.9. Egress from Dwelling Units

### 9.9.9.1. Travel Limit to Exits or Egress Doors

- (1) Except as provided in Sentences (2) and (3), every *dwelling unit* containing more than 1 *storey* shall have *exits* or egress doors located so that it shall not be necessary to travel up or down more than 1 *storey* to reach a level served by,
  - (a) an egress door to a *public corridor*, enclosed *exit* stair or exterior passageway, or
  - (b) an *exit* doorway not more than 1 500 mm above adjacent ground level.
- (2) Where a *dwelling unit* is not located above or below another *suite*, the travel limit from a floor level in the *dwelling unit* to an *exit* or egress door is permitted to exceed 1 *storey* where that floor level is served by an openable window or door,
  - (a) providing an unobstructed opening of not less than 1 000 mm in height and 550 mm in width, and
  - (b) located so that the sill is not more than,
    - (i) 1 000 mm above the floor, and
    - (ii) 7 m above adjacent ground level.
- (3) The travel limit from a floor level in a *dwelling unit* to an *exit* or egress door is permitted to exceed 1 *storey* where that floor level has direct access to a balcony.

### 9.9.9.2. Two Separate Exits

- (1) Except as provided in Sentence 9.9.7.3.(1), where an egress door from a *dwelling unit* opens onto a *public corridor* or exterior passageway it shall be possible from the location where the egress door opens onto the corridor or exterior passageway to go in opposite directions to two separate *exits* unless the *dwelling unit* has a second and separate *means of egress*.

### 9.9.9.3. Shared Egress Facilities

- (1) A *dwelling unit* shall be provided with a second and separate *means of egress* where an egress door from the *dwelling unit* opens onto,
  - (a) an *exit* stairway serving more than one *suite*,
  - (b) a *public corridor*,
    - (i) serving more than one *suite*, and
    - (ii) served by a single *exit*,
  - (c) an exterior passageway,
    - (i) serving more than one *suite*,
    - (ii) served by a single *exit* stairway or ramp, and
    - (iii) more than 1.5 m above adjacent ground level, or
  - (d) a balcony,
    - (i) serving more than one *suite*,
    - (ii) served by a single *exit* stairway or ramp, and
    - (iii) more than 1.5 m above adjacent ground level.

## 9.9.10. Egress from Bedrooms

### 9.9.10.1. Egress Windows or Doors for Bedrooms

- (1) Except where a door on the same floor level as the bedroom provides direct access to the exterior, every floor level containing a bedroom in a *suite* shall be provided with at least one outside window that,
  - (a) is openable from the inside without the use of tools,
  - (b) provides an individual, unobstructed open portion having a minimum area of 0.35 m<sup>2</sup> with no dimension less than 380 mm, and

- (c) maintains the required opening described in Clause (b) without the need for additional support. (See Appendix A.)
- (2) Except for *basement* areas, the window required in Sentence (1) shall have a maximum sill height of 1 000 mm above the floor. (See Appendix A.)
- (3) When sliding windows are used, the minimum dimension described in Sentence (1) shall apply to the openable portion of the window.
- (4) Where the sleeping area within a *live/work unit* is on a *mezzanine* with no obstructions more than 1 070 mm above the floor, the window required in Sentence (1) may be provided on the main level of the *live/work unit* provided the *mezzanine* is not more than 25% of the area of the *live/work unit* or 20 m<sup>2</sup>, whichever is less, and an unobstructed direct path of travel is provided from the *mezzanine* to this window.
- (5) Where a window required in Sentence (1) opens into a window well, a clearance of not less than 550 mm shall be provided in front of the window. (See Appendix A.)
- (6) Where the sash of a window referred to in Sentence (5) swings towards the window well, the operation of the sash shall not reduce the clearance in a manner that would restrict escape in an emergency.
- (7) Where a protective enclosure is installed over the window well referred to in Sentence (5), such enclosure shall be openable from the inside without the use of keys, tools or special knowledge of the opening mechanism.

## 9.9.11. Signs

### 9.9.11.1. Application

- (1) This Subsection applies to all *exits* except those serving not more than one *dwelling unit*.

### 9.9.11.2. Visibility of Exits

- (1) *Exits* shall be located so as to be clearly visible or their locations shall be clearly indicated.

### 9.9.11.3. Exit Signs

- (1) Except as required in Sentence (7), every *exit* door shall have an *exit* sign placed over it or adjacent to it if the *exit* serves,
  - (a) a *building* that is 3 *storeys* in *building height*,
  - (b) a *building* having an *occupant load* of more than 150, or
  - (c) a room or *floor area* that has a fire escape as part of a required *means of egress*.
- (2) Except as required in Sentence (6), every *exit* sign shall,
  - (a) be visible on approach to the *exit*,
  - (b) except as provided in Sentence (3), consist of a green pictogram and a white or lightly tinted graphical symbol meeting the colour specifications referred to in ISO 3864-1, “Graphical Symbols – Safety Colours and Safety Signs – Part 1: Design Principles for Safety Signs and Safety Markings”, and
  - (c) conform to the dimensions indicated in ISO 7010, “Graphical Symbols – Safety Colours and Safety Signs – Safety Signs Used in Workplaces and Public Areas”, for the following symbols:
    - (i) E001 emergency exit left,
    - (ii) E002 emergency exit right,
    - (iii) E005 90-degree directional arrow, and
    - (iv) E006 45-degree directional arrow.

- r<sub>5</sub>
- (3) Internally illuminated *exit* signs shall be continuously illuminated, and,
    - (a) where illumination of the sign is powered by an electrical circuit, be constructed in conformance with CSA 22.2 No. 141, “Emergency Lighting Equipment”, or
    - (b) where illumination of the sign is not powered by an electrical circuit, be,
      - (i) constructed in conformance with CAN/ULC-S572, “Photoluminescent and Self-Luminous Signs and Path Marking Systems”, and
      - (ii) labelled in accordance with the time duration for which they have been tested and *listed*.
  - (4) Externally illuminated *exit* signs shall be illuminated at all times by a light fixture supplied by an electrical circuit.
  - (5) The circuitry serving lighting for externally and internally illuminated *exit* signs shall,
    - (a) serve no equipment other than emergency lighting in the area where the *exit* signs are installed, and
    - (b) be connected to an emergency power supply as described in Sentences 9.9.12.3.(2), (3) and (7).
  - (6) An *exit* sign conforming to Clauses (2)(b) and (c) with an arrow or other indicator pointing at the direction of egress shall be provided where no *exit* is visible from,
    - (a) a *public corridor*,
    - (b) a corridor used by the public, or
    - (c) a principal route serving an open *floor area* having an *occupant load* of more than 150.
  - (7) Except for *suite* doors opening directly to the exterior, every *exit* serving a *hotel* shall have an *exit* sign placed over it or adjacent to it.

#### **9.9.11.4. Signs for Stairs and Ramps at Exit Level**

- (1) In *buildings* that are 3 *storeys* in *building height*, any part of an *exit* ramp or stairway that continues up or down past the lowest *exit level* shall be clearly marked to indicate that it does not lead to an *exit* where the portion below *exit level* may be mistaken as the direction of *exit* travel.

#### **9.9.11.5. Floor Numbering**

- (1) Arabic numerals indicating the assigned floor number shall be,
  - (a) except in *hotels*, mounted permanently on the stair side of the wall at the latch side of doors to *exit* stair shafts,
  - (b) in *hotels*, mounted permanently on each side of the *exit* doors to the *exit* stair shaft,
  - (c) not less than 60 mm high, raised approximately 0.8 mm above the surface,
  - (d) located 1 500 mm from the finished floor and not more than 300 mm from the door, and
  - (e) contrasting in colour with the surface on which they are applied.

### **9.9.12. Lighting**

#### **9.9.12.1. Application**

- (1) This Subsection applies to the lighting of all *means of egress* except those within *dwelling units*.

#### **9.9.12.2. Required Lighting in Egress Facilities**

- (1) Every *exit*, *public corridor* or corridor providing *access to exit* for the public shall be equipped to provide illumination to an average level of not less than 50 lx at floor or tread level and at all points such as angles and intersections at changes of level where there are stairs or ramps.
- (2) The minimum value of the illumination required by Sentence (1) shall be not less than 10 lx.

### 9.9.12.3. Emergency Lighting

- (1) Emergency lighting shall be provided in,
  - (a) *exits*,
  - (b) principal routes providing *access to exit* in an open *floor area*,
  - (c) corridors used by the public,
  - (d) underground walkways, and
  - (e) *public corridors*.
- (2) Emergency lighting required in Sentence (1) shall be provided from a source of energy separate from the electrical supply for the *building*.
- (3) Lighting required in Sentence (1) shall be designed to be automatically actuated for a period of not less than 30 min when the electric lighting in the affected area is interrupted.
- (4) Illumination from lighting required in Sentence (1) shall be provided to average levels of not less than 10 lx at floor or tread level.
- (5) The minimum value of the illumination required by Sentence (4) shall be not less than 1 lx.
- (6) Where incandescent lighting is provided, lighting equal to 1 W/m<sup>2</sup> of *floor area* shall be considered to meet the requirement in Sentence (4).
- (7) Where self-contained emergency lighting units are used, they shall conform to CSA C22.2 No. 141, “Emergency Lighting Equipment”.

## Section 9.10. Fire Protection

### 9.10.1. Definitions and Application

#### 9.10.1.1. Support of Noncombustible Construction

- (1) Where an assembly is required to be of *noncombustible construction* and to have a *fire-resistance rating*, it shall be supported by *noncombustible construction*.

#### 9.10.1.2. Sloped Roofs

- R3** (1) For the purposes of this Section, roofs with slopes of 60° or more to the horizontal and that are adjacent to a room or space intended for occupancy shall be considered as a wall.

#### 9.10.1.3. Items Under Part 3 Jurisdiction

- (1) Tents, *air-supported structures*, transformer vaults, *walkways*, elevators and escalators shall conform to Part 3.
- (2) Where rooms or spaces are intended for an *assembly occupancy*, such rooms or spaces shall conform to Part 3.
- (3) *Basements* containing more than 1 *storey* or exceeding 600 m<sup>2</sup> in area shall conform to Part 3.
- (4) Where rooms or spaces are intended for the storage, manufacture or use of hazardous or explosive material, such rooms or spaces shall conform to Part 3.

- (a) the *suite* in which it is located, where there is more than one *suite* in the *storey*, or
- (b) the *storey* in which it is located, in all other cases.

(2) *Mezzanines* shall not be considered as *storeys* for the purpose of determining *building height* where they occupy an aggregate area not exceeding 40% of the area of the room or the *storey* in which they are located provided the space above the *mezzanine* floor has no visual obstructions more than 1 070 mm above such floors.

#### **9.10.4.2. More Than One Level of Mezzanine**

(1) Where more than 1 level of *mezzanine* is provided in a *storey*, each level additional to the first shall be considered as a *storey*.

#### **9.10.4.3. Basement Storage Garages**

(1) Where a *basement* is used primarily as a *storage garage*, the *basement* is permitted to be considered as a separate *building* for the purposes of this Section provided the floor above the *basement* and the exterior walls of the *basement* above the adjoining ground level are constructed as *fire separations* of masonry or concrete having a *fire-resistance rating* of not less than 2 h.

#### **e<sub>3</sub> 9.10.4.4. Rooftop Enclosures**

(1) Rooftop enclosures provided for elevator machinery, stairways and *service rooms*, used for no purpose other than for service to the *building*, shall not be considered as a *storey* in calculating the *building height*.

### **9.10.5. Permitted Openings in Wall and Ceiling Assemblies**

#### **9.10.5.1. Permitted Openings in Wall and Ceiling Membranes**

(1) Except as permitted in Sentences (2) and (4), a membrane forming part of an assembly required to have a *fire-resistance rating* shall not be pierced by openings into the assembly unless the assembly has been tested and rated for such openings.

(2) A wall or ceiling membrane forming part of an assembly required to have a *fire-resistance rating* is permitted to be pierced by openings for electrical and similar service outlet boxes provided such outlet boxes are tightly fitted.

(3) Where boxes referred to in Sentence (2) are located on both sides of walls required to provide a *fire-resistance rating*, they shall be offset where necessary to maintain the integrity of the *fire separation*.

(4) A membrane ceiling forming part of an assembly assigned a *fire-resistance rating* on the basis of Table 2 of MMAH Supplementary Standard SB-3, “Fire and Sound Resistance of Building Assemblies”, is permitted to be pierced by openings leading to ducts within the ceiling space provided the ducts, the amount of openings and their protection conform to the requirements in MMAH Supplementary Standard SB-2, “Fire Performance Ratings”.

### **9.10.6. Construction Types**

#### **9.10.6.1. Combustible Elements in Noncombustible Construction**

(1) Where a *building* or part of a *building* is required to be of *noncombustible construction*, *combustible* elements shall be limited in conformance with the requirements in Subsection 3.1.5.

### 9.10.6.2. Heavy Timber Construction

(1) *Heavy timber construction* shall be considered to have a 45 min *fire-resistance rating* when it is constructed in accordance with the requirements for *heavy timber construction* in Article 3.1.4.7.

### 9.10.7. Steel Members

#### 9.10.7.1. Protection of Structural Steel Members

(1) Except as provided in Article 3.2.2.3., structural steel members used in construction required to have a *fire-resistance rating* shall be protected to provide the required *fire-resistance rating*.

### r<sub>1</sub> 9.10.8. Fire-Resistance, Combustibility and Sprinklers in Relation to Occupancy, Height and Supported Elements

#### 9.10.8.1. Fire-Resistance Ratings for Floors and Roofs

(1) Except as otherwise provided in this Subsection, the *fire-resistance ratings* of floors and roofs shall conform to Table 9.10.8.1.

Table 9.10.8.1.  
Fire Resistance Ratings for Structural Members and Assemblies  
Forming Part of Sentence 9.10.8.1.(1)

Major Occupancy	Maximum Building Height, Storeys	Minimum <i>Fire-Resistance Rating</i> by Building Element, min		
		Floors Except Floors over Crawl Spaces	Mezzanine Floors	Roofs
Residential (Group C)	3	45	45	—
All other occupancies	2	45	—	—
	3	45	45	45
Column 1	2	3	4	5

#### 9.10.8.2. Fire-Resistance Ratings in Sprinklered Buildings

(1) Except for roofs that support an *occupancy*, the requirements in Table 9.10.8.1. for roof assemblies to have a *fire-resistance rating* are permitted to be waived in *sprinklered buildings* where,

(a) the sprinkler system is electrically supervised in conformance with Sentence 3.2.4.10.(3), and

(b) the operation of the sprinkler system will cause a signal to be transmitted to the fire department in conformance with Sentence 3.2.4.8.(4).

#### 9.10.8.3. Fire-Resistance Ratings for Walls, Columns and Arches

(1) Except as otherwise provided in this Subsection, all *loadbearing* walls, columns and arches in the *storey* immediately below a floor or roof assembly shall have a *fire-resistance rating* of not less than that required for the supported floor or roof assembly.

### r<sub>1</sub> 9.10.8.4. Automatic Sprinkler Systems

(1) A retirement home regulated under the *Retirement Homes Act, 2010* shall be *sprinklered* in accordance with Sentence 9.10.1.3.(8).



### **9.10.13.6. Steel Door Frames**

- r<sub>5</sub> (1) Steel door frames forming part of a *closure* in a *fire separation*, including anchorage requirements, shall conform to CAN/ULC-S105, “Fire Door Frames Meeting the Performance Required by CAN/ULC-S104”.

### **9.10.13.7. Glass Block as a Closure**

- (1) Glass block that has not been tested in accordance with Article 9.10.3.1. is permitted as a *closure* in a *fire separation* required to have a *fire-resistance rating* of not more than 1 h.

### **9.10.13.8. Maximum Size of Opening**

- (1) The size of an opening in an interior *fire separation*, even where protected with a *closure*, shall not exceed 11 m<sup>2</sup>, with no dimension greater 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*, even where protected with a *closure*, shall not exceed 22 m<sup>2</sup>, with no dimension greater than 6 m, when the *fire compartments* on both sides of the *fire separation* are *sprinklered*.

### **9.10.13.9. Door Latch**

- (1) Every swing type door in a *fire separation* shall be equipped with a latch.

### **9.10.13.10. Self-Closing Device**

- (1) Except as described in Sentence (2), every door in a *fire separation* shall have a self-closing device.
- (2) Self-closing devices are not required between *public corridors* and *suites* in *business and personal services occupancies*, except in,
- (a) dead-end corridors, or
  - (b) a corridor that serves a *hotel*.

### **9.10.13.11. Hold-Open Devices**

- (1) Where hold-open devices are used on doors in required *fire separations*, they shall be installed in accordance with Article 3.1.8.12.

### **9.10.13.12. Service Room Doors**

- (1) Swing-type doors shall open into *service rooms* containing fuel-fired equipment where such doors lead to *public corridors* or rooms used for assembly but shall swing outward from such rooms in all other cases.

### **9.10.13.13. Fire Dampers**

- (1) Except as permitted in Sentences (2) to (5) and Sentence 9.10.5.1.(4), a duct that penetrates an assembly required to be a *fire separation* with a *fire-resistance rating* shall be equipped with a *fire damper* in conformance with Articles 3.1.8.4. and 3.1.8.9.
- (2) A *fire damper* is not required where a *noncombustible* branch duct pierces a required *fire separation* provided the duct,
- (a) has a melting point not below 760°C,
  - (b) has a cross-sectional area less than 130 cm<sup>2</sup>, and

- (c) supplies only *air-conditioning* units or combined *air-conditioning* and heating units discharging air at not more than 1.2 m above the floor.
- (3) A *fire damper* is not required where a *noncombustible* branch duct pierces a required *fire separation* around an *exhaust duct* riser in which the air flow is upward provided,
  - (a) the melting point of the branch duct is not below 760°C,
  - (b) the branch duct is carried up inside the riser at least 500 mm, and
  - (c) the *exhaust duct* is under negative pressure as described in Article 9.10.9.18.
- (4) *Noncombustible* ducts that penetrate a *fire separation* separating a *vertical service space* from the remainder of the *building* need not be equipped with a *fire damper* at the *fire separation* provided,
  - (a) the ducts have a melting point above 760°C, and
  - (b) each individual duct exhausts directly to the outside at the top of the *vertical service space*.
- (5) A duct serving commercial cooking equipment and piercing a required *fire separation* need not be equipped with a *fire damper* at the *fire separation*.

#### 9.10.13.14. Fire Stop Flaps

- (1) *Fire stop flaps* in ceiling membranes required in Sentence 9.10.5.1.(4) shall be constructed in conformance with MMAH Supplementary Standard SB-2, “Fire Performance Ratings”.

#### 9.10.13.15. Doors Between Garages and Dwelling Units

- (1) A door between an attached or built-in garage and a *dwelling unit* shall be tight-fitting and weatherstripped to provide an effective barrier against the passage of gases and exhaust fumes and shall be fitted with a self-closing device.
- (2) A doorway between an attached or built-in garage and a *dwelling unit* shall not be located in a room intended for sleeping.

#### 9.10.13.16. Door Stops

- (1) Where a door is installed so that it may damage the integrity of a *fire separation* if its swing is unrestricted, door stops shall be installed to prevent such damage.

### 9.10.14. Spatial Separation Between Buildings

#### 9.10.14.1. Application

- (1) Except as permitted in Subsection 9.10.15., this Subsection applies to all *buildings*.

#### 9.10.14.2. Area and Location of Exposing Building Face

- (1) The area of an *exposing building face* shall be,
  - (a) taken as the exterior wall area facing in one direction on any side of a *building*, and
  - (b) calculated as,
    - (i) the total area measured from the finished ground level to the uppermost ceiling, or
    - (ii) the area for each *fire compartment*, where a *building* is divided into *fire compartments* by *fire separations* with *fire-resistance ratings* not less than 45 min.
- (2) For the purpose of using Table 9.10.14.4. to determine the maximum aggregate area of *unprotected openings* permitted in an irregularly-shaped or skewed exterior wall, the location of the *exposing building face* shall be taken as a

(4) Where a fire alarm system is required in a *hotel*, *heat detectors* shall be installed in every room in a *suite* and in every room not located in a *suite* in a *floor area* containing a *hotel*, other than washrooms within a *suite*, saunas, refrigerated areas and swimming pools.

#### **9.10.18.5. Smoke Detectors in Recirculating Air Handling Systems**

(1) Except for a recirculating air system serving not more than one *dwelling unit*, where a fire alarm system is required to be installed, every recirculating air handling system shall be designed to prevent the circulation of smoke upon a signal from a duct-type *smoke detector* where such system supplies more than one *suite* on the same floor or serves more than 1 *storey*.

#### **9.10.18.6. Portions of Buildings Considered as Separate Buildings**

(1) Except as provided in Sentence (2), where a vertical *fire separation* having a *fire-resistance rating* of at least 1 h separates a portion of a *building* from the remainder of the *building* and there are no openings through the *fire separation* other than those for piping, tubing, wiring and conduit, the requirements for fire alarm and detection systems is permitted to be applied to each portion so separated as if it were a separate *building*.

(2) The permission in Sentence (1) to consider separated portions of a *building* as separate *buildings* does not apply to *service rooms* and storage rooms.

#### **9.10.18.7. Central Vacuum Systems**

(1) A central vacuum cleaning system serving more than one *suite* or *storey* in a *building* equipped with a fire alarm system shall be designed to shut down upon activation of the fire alarm system.

#### **9.10.18.8. Open-Air Storage Garages**

(1) Except as required in Article 9.10.18.1., a fire alarm system is not required in a *storage garage* conforming to Article 3.2.2.83. provided there are no other *occupancies* in the *building*.

#### **9.10.18.9. Fire Alarm System in a Hotel**

(1) If a fire alarm system is required in a *building* containing a *hotel*, a single stage fire alarm system shall be provided.

#### **9.10.18.10. Commissioning of Life Safety and Fire Protection Systems**

(1) Where life safety and fire protection systems are installed to comply with the provisions of this Code or the Fire Code made under the *Fire Protection and Prevention Act, 1997*, the commissioning of these integrated systems must be performed as a whole to ensure the proper operation and inter-relationship of the systems.

(2) Sentence (1) does not apply to a *building* that contains only *dwelling units* and has no *dwelling unit* above another *dwelling unit*.

### **9.10.19. Smoke Alarms**

#### **e<sub>3</sub> 9.10.19.1. Required Smoke Alarms** (See Appendix A.)

(1) *Smoke alarms* conforming to CAN/ULC-S531, “Smoke Alarms”, shall be installed in each *dwelling unit* and in each sleeping room not within a *dwelling unit*.

- r<sub>5</sub> (2) *Smoke alarms* required in Sentence (1) shall have a visual signalling component conforming to the requirements in 18.5.3. (Light, Color and Pulse Characteristics) of NFPA 72, “National Fire Alarm and Signaling Code”.
- r<sub>5</sub> (3) The visual signalling component required in Sentence (2) need not,
- be integrated with the *smoke alarm* provided it is interconnected to it,
  - be on battery backup, or
  - have synchronized flash rates, when installed in a *dwelling unit*.
- r<sub>5</sub> (4) The luminous intensity for visual signalling components required in Sentence (2) that are installed in sleeping rooms shall be a minimum of 175 cd.
- r<sub>5</sub> (5) *Smoke alarms* required in Sentence (1) shall be installed on or near the ceiling.

### 9.10.19.2. Sound Patterns of Smoke Alarms

#### e<sub>3</sub> 9.10.19.3. Location of Smoke Alarms (See Appendix A.)

- Within *dwelling units*, sufficient *smoke alarms* shall be installed so that,
  - there is at least one *smoke alarm* installed on each *storey*, including *basements*, and
  - on any *storey* of a *dwelling unit* containing sleeping rooms, a *smoke alarm* is installed,
    - in each sleeping room, and
    - in a location between the sleeping rooms and the remainder of the *storey*, and if the sleeping rooms are served by a hallway, the *smoke alarm* shall be located in the hallway.

(See Appendix A.)

- A *smoke alarm* required in Sentence (1) shall be installed in conformance with CAN/ULC-S553, “Installation of Smoke Alarms”.

- r<sub>5</sub> (3) A *smoke alarm* required in Sentence (1) shall have a visual signalling component conforming to the requirements in 18.5.3. (Light, Color and Pulse Characteristics) of NFPA 72, “National Fire Alarm and Signaling Code”.
- r<sub>5</sub> (4) The visual signalling component required in Sentence (3) need not,
- be integrated with the *smoke alarm* provided it is interconnected to it,
  - be on battery backup, or
  - have synchronized flash rates, when installed in a *dwelling unit*.
- r<sub>5</sub> (5) The luminous intensity for visual signalling components required in Sentence (3) that are installed in sleeping rooms shall be a minimum of 175 cd.
- r<sub>5</sub> (6) *Smoke alarms* required in Sentence (1) shall be installed on or near the ceiling.

### 9.10.19.4. Power Supply

- Except as provided in Sentences (2) and (3), *smoke alarms* required in Sentence 9.10.19.1.(1) shall,
  - be installed with permanent connections to an electrical circuit,
  - have no disconnect switch between the overcurrent device and the *smoke alarm*, and
  - in case the regular power supply to the *smoke alarm* is interrupted, be provided with a battery as an alternative power source that can continue to provide power to the *smoke alarm* for a period of not less than 7 days in the normal condition, followed by 4 min of alarm.
- Where the *building* is not supplied with electrical power, *smoke alarms* are permitted to be battery operated.

- (3) *Suites of residential occupancy* are permitted to be equipped with *smoke detectors* in lieu of *smoke alarms*, provided the *smoke detectors*,
- (a) are capable of independently sounding audible signals within the individual *suites*,
  - (b) except as provided by Sentence (4), are installed in conformance with CAN/ULC-S524, “Installation of Fire Alarm Systems”, and
  - (c) form part of the fire alarm system.
- (4) *Smoke detectors* permitted to be installed in lieu of *smoke alarms* as provided in Sentence (3) are permitted to sound localized alarms within individual *suites*, and need not sound an alarm throughout the rest of the *building*.

#### **9.10.19.5. Interconnection of Smoke Alarms**

- (1) Where more than one *smoke alarm* is required in a *dwelling unit*, the *smoke alarms* shall be wired so that the activation of one alarm will cause all alarms within the *dwelling unit* to sound.

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### 9.20.17.6. Anchoring of Roof Framing to Top of Flat Insulating Concrete Form Walls

- (1) Roof framing supported on the top of flat insulating concrete form walls shall be fixed to the top plates, which shall be anchored to the wall with anchor bolts,
  - (a) not less than 12.7 mm in diameter, and
  - (b) spaced not more than 1.2 m o.c.
- (2) The anchor bolts described in Sentence (1) shall be placed in the centre of the flat insulating concrete form wall and shall be embedded not less than 100 mm into the concrete.
- (3) Attachment of roof framing to wood top plates shall be in accordance with Table 9.23.3.4.

### 9.20.17.7. Protection from Precipitation and Damage

- (1) Above ground flat insulating concrete form walls shall be protected from precipitation and damage in conformance with Section 9.27.

## Section 9.21. Masonry and Concrete Chimneys and Flues

### 9.21.1. General

#### 9.21.1.1. Application

- (1) This Section applies to,
  - (a) rectangular *masonry or concrete chimneys* not more than 12 m in height serving fireplaces or serving *appliances* having a combined total rated heat output of 120 kW or less, and
  - (b) *flue pipes* serving solid fuel-burning *appliances*.
- (2) Except as provided in Sentence 9.21.1.3.(1), *chimneys* (other than those described in Sentence (1) and Sentence 9.21.1.2.(1)), *gas vents* and *flue pipes* serving gas-, oil- or solid fuel-burning *appliances* and associated equipment shall conform to Section 6.3.

#### 9.21.1.2. Factory-Built Chimneys

- (1) *Factory-built chimneys* serving solid fuel-burning *appliances*, and their installation, shall conform to CAN/ULC-S629-M, “650°C Factory-Built Chimneys”. (See Appendix A.)

#### 9.21.1.3. Flue Pipes

- r<sub>5</sub> (1) *Flue pipes* serving solid fuel-burning *stoves, cooktops* and *space heaters* shall conform to CSA B365, “Installation Code for Solid-Fuel-Burning Appliances and Equipment”.

#### 9.21.1.4. Chimney or Flue Pipe Walls

- (1) The walls of any *chimney* or *flue pipe* shall be constructed to be smoke- and flame-tight.

## 9.21.2. Chimney Flues

### 9.21.2.1. Chimney Flue Limitations

- (1) A *chimney flue* that serves a fireplace or incinerator shall not serve any other *appliance*.
- (2) A *chimney flue* that serves a solid fuel-burning *appliance* shall not be connected to a natural gas- or propane-fired *appliance*.
- (3) A *chimney flue* that serves a solid fuel-burning *appliance* shall not be connected to an oil-burning *appliance* unless the solid fuel-burning *appliance* is *listed* for such installation and the installation of both *appliances* meets their respective installation requirements.

### 9.21.2.2. Connections of More Than One Appliance

- (1) Except as required in Article 9.21.2.1., two or more fuel-burning *appliances* are permitted to be connected to the same *chimney flue* provided adequate draft is maintained for the connected *appliances* and the connections are made as described in Sentences (2) and (3).
- (2) Where two or more solid fuel-burning *appliances* are connected to the same *chimney flue*, the *appliances* must be located on the same *storey*.
- (3) The connection referred to in Sentence (2) for a solid fuel-burning *appliance* shall be made below connections for *appliances* burning other fuels.

### 9.21.2.3. Inclined Chimney Flues

- (1) *Chimney flues* shall not be inclined more than 45° to the vertical.

### 9.21.2.4. Size of Chimney Flues

- (1) Except for *chimneys* serving fireplaces, the size of a *chimney flue* shall conform to the requirements of the solid fuel-burning *appliance* installation standard referenced in Sentence 6.2.1.4.(1) and Article 9.33.1.2.
- (2) Where a *chimney flue* serves only one solid fuel-burning *appliance*, the *flue* area shall be at least equal to that of the *flue pipe* connected to it.

### 9.21.2.5. Fireplace Chimneys

- (1) The size of a *chimney flue* serving a masonry fireplace shall be within the allowable range specified in Table 9.21.2.5.A. or Table 9.21.2.5.B.



(2) A hearth for a fireplace with an opening raised not less than 200 mm from a *combustible* floor is permitted to be supported on that floor provided the requirements of Clauses 5.3.6.5. to 5.3.6.7. of CAN/CSA-A405-M, “Design and Construction of Masonry Chimneys and Fireplaces”, are followed.

## 9.22.6. Damper

### 9.22.6.1. Required Damper and Size

(1) The throat of every fireplace shall be equipped with a metal damper sufficiently large to cover the full area of the throat opening.

## 9.22.7. Smoke Chamber

### 9.22.7.1. Slope of Smoke Chamber

(1) The sides of the smoke chamber connecting a fireplace throat with a *flue* shall not be sloped at an angle greater than 45° to the vertical.

### 9.22.7.2. Wall Thickness

(1) The thickness of masonry walls surrounding the smoke chamber shall be not less than 190 mm at the sides, front and back, except that the portions of the back exposed to the outside may be 140 mm thick.

## 9.22.8. Factory-Built Fireplaces

### 9.22.8.1. Conformance to Standard

(1) Factory-built fireplaces and their installation shall conform to CAN/ULC-S610-M, “Factory-Built Fireplaces”.

## 9.22.9. Clearance of Combustible Material

### 9.22.9.1. Clearance to the Fireplace Opening

(1) *Combustible* material shall not be placed on or near the face of a fireplace within 150 mm of the fireplace opening, except that where the *combustible* material projects more than 38 mm out from the face of the fireplace above the opening, such material shall be at least 300 mm above the top of the opening.

### 9.22.9.2. Metal Exposed to the Interior

(1) Metal exposed to the interior of a fireplace such as the damper control mechanism shall have at least a 50 mm clearance from any *combustible* material on the face of the fireplace where such metal penetrates through the face of the fireplace.

### 9.22.9.3. Clearance to Combustible Framing

(1) Not less than a 100 mm clearance shall be provided between the back and sides of a solid fuel-burning fireplace and *combustible* framing, except that a 50 mm clearance is permitted where the fireplace is located in an exterior wall.

(2) Not less than a 50 mm clearance shall be provided between the back and sides of the smoke chamber of a solid fuel-burning fireplace and *combustible* framing, except that a 25 mm clearance is permitted where the fireplace is located in an exterior wall.

#### 9.22.9.4. Heat Circulating Duct Openings

- (1) The clearance of *combustible* material above heat circulating duct openings from those openings shall be not less than,
- 300 mm where the *combustible* material projects not less than 38 mm from the face, and
  - 150 mm where the projection is less than 38 mm.

### 9.22.10. Fireplace Inserts and Hearth-Mounted Stoves

#### 9.22.10.1. Appliance Standard

(1) Fireplace inserts and hearth mounted *stoves* vented through the throat of a fireplace shall conform to ULC-S628, “Fireplace Inserts”.

#### 9.22.10.2. Installation

- r<sub>5</sub>
- (1) The installation of fireplace inserts and hearth mounted *stoves* vented through the throat of a fireplace shall conform to CSA B365, “Installation Code for Solid-Fuel-Burning Appliances and Equipment”.
- (2) Fireplace inserts and hearth mounted *stoves* vented through the throat of a fireplace described in Sentence (1) may be installed in existing fireplaces only if a minimum thickness of 190 mm of solid masonry is provided between the smoke chamber and any existing *combustible* materials, unless the insert is *listed* for lesser clearances.
- (3) A fireplace insert installed in a masonry fireplace shall have,
- a *listed* metal *chimney* liner installed from the insert collar to the top of the *chimney*, or
  - a direct sealed connection to the *chimney flue* where such provision is part of an insert conforming to Sentence 9.22.10.1.(1).

## Section 9.23. Wood Frame Construction

### 9.23.1. Application

#### 9.23.1.1. Limitations (See Appendix A.)

- (1) This Section applies where wall, floor and roof planes are generally comprised of lumber frames of small repetitive structural members, or engineered components, and where,
- roof and wall planes are clad, sheathed or braced on at least one side,
  - the small repetitive structural members are spaced not more than 610 mm o.c.,
  - the walls do not serve as *foundations*,
  - the specified *live load* on supported subfloors and floor framing does not exceed 2.4 kPa, and
  - the span of any structural member does not exceed 12.20 m.
- (See Appendix A.)
- (2) Where the conditions in Sentence (1) are exceeded for wood construction, the design of the framing and fastening shall conform to Subsection 4.3.1.

Table 9.23.13.11.  
Maximum Roof Truss Deflections  
Forming Part of Sentence 9.23.13.11.(1)

Truss Span	Type of Ceiling	Maximum Deflection
4.3 m or less	Plaster or gypsum board	1/360 of the span
	Other than plaster or gypsum board	1/180 of the span
Over 4.3 m	Plaster or gypsum board	1/360 of the span
	Other than plaster or gypsum board	1/240 of the span
Column 1	2	3

(2) The joint connections used in trusses described in Sentence (1) shall be designed in conformance with the requirements in Subsection 4.3.1. (See Appendix A.)

(3) Where the length of compression web members in roof trusses described in Sentence (1) exceeds 1.83 m, such web members shall be provided with continuous bracing to prevent buckling.

(4) Bracing required in Sentence (3) shall consist of not less than 19 mm by 89 mm lumber nailed at right angles to the web members near their centres with at least two 63 mm nails for each member.

(5) Where the ability of a truss design to satisfy the requirements of Sentence (1) is demonstrated by testing, it shall consist of a full scale load test carried out in conformance with CSA S307-M, “Load Test Procedure for Wood Trusses for Houses and Small Buildings”.

r<sub>5</sub> (6) Where the ability of a truss design to satisfy the requirements of Sentence (1) is demonstrated by analysis, it shall be carried out in accordance with good engineering practice such as described in TPIC, “Truss Design Procedures and Specifications for Light Metal Plate Connected Wood Trusses (Limit States Design)”.

## 9.23.14. Subflooring

### 9.23.14.1. Subflooring Required

(1) Subflooring shall be provided beneath finish flooring where the finish flooring does not have adequate strength to support the design loads.

### 9.23.14.2. Material Standards

r<sub>3</sub> (1) Except as provided in Sentence (2), wood-based panels for subfloors shall conform to,

(a) CSA O121, “Douglas Fir Plywood”,

(b) CSA O151, “Canadian Softwood Plywood”,

(c) CSA O153-M, “Poplar Plywood”,

r<sub>5</sub> (d) CSA O325, “Construction Sheathing”, or

(e) CSA O437.0, “OSB and Waferboard”.

(2) Particleboard subflooring may be used only where a *building* is constructed in a factory so that the subfloor will not be exposed to the weather.

(3) Subflooring described in Sentence (2) shall conform to grade D-2 or D-3 in ANSI A208.1, “Particleboard”.

(4) Subflooring described in Sentence (2) shall have its upper surface and all edges treated to restrict water absorption where the subfloor is used in bathrooms, kitchens, laundry rooms or other areas subject to periodic wetting. (See Appendix A.)

### 9.23.14.3. Edge Support

(1) Where the edges of panel-type subflooring are required to be supported, such support shall consist of tongue-and-groove panel edges or not less than 38 mm by 38 mm blocking securely nailed between framing members.

### 9.23.14.4. Direction of Installation

(1) Plywood subflooring shall be installed with the surface grain at right angles to the joists and with joints parallel to floor joists staggered.

- R<sub>5</sub>** (2) OSB subflooring conforming to CSA O325, “Construction Sheathing”, or to O-1 and O-2 grades in CSA O437.0, “OSB and Waferboard”, and waferboard subflooring conforming to R-1 grade in CSA O437.0 shall be installed so that the direction of face orientation is at right angles to the joists and the joints parallel to the floor joists are staggered. (See Appendix A.)

### 9.23.14.5. Subfloor Thickness or Rating

(1) Except as provided in Sentences (2) and (3), subfloors shall conform to Table 9.23.14.5.A. or 9.23.14.5.B.

**R<sub>5</sub>**

Table 9.23.14.5.A.  
Thickness of Subflooring  
Forming Part of Sentences 9.23.14.5.(1) and 9.23.15.7.(1)

Maximum Spacing of Supports, mm	Plywood and OSB, O-2 Grade Minimum Thickness, mm	OSB, O-1 Grade, and Waferboard, R-1 Grade Minimum Thickness, mm	Particleboard Minimum Thickness, mm	Lumber Minimum Thickness, mm
406	15.5	15.9	15.9	17.0
508	15.5	15.9	19.0	19.0
610	18.5	19.0	25.4	19.0
Column 1	2	3	4	5

**R<sub>5</sub>**

Table 9.23.14.5.B.  
Rating for Subfloor when Applying CSA O325  
Forming Part of Sentences 9.23.14.5.(1) and 9.23.15.7.(1)

Maximum Spacing of Supports, mm	Subfloor, Panel Mark	Subfloor Used with Panel-Type Underlay, Panel Mark
406	1F16	2F16
508	1F20	2F20
610	1F24	2F24
Column 1	2	3

(2) Where the finished flooring consists of not less than 19 mm matched wood strip flooring laid at right angles to joists, spaced not more than 610 mm o.c., subflooring shall be permitted to consist of not less than,

- 12.5 mm thick plywood,
- 12.5 mm thick OSB conforming to O-2 grade,
- 12.7 mm thick OSB conforming to O-1 grade,
- 12.7 mm thick waferboard conforming to R-1 grade, or
- OSB conforming to 2R32 / 2F16 grade.

- (3) Except where the flooring consists of ceramic tiles applied with adhesive, where a separate panel-type underlay or concrete topping is applied to a subfloor on joists spaced not more than 406 mm o.c., the subfloor may consist of not less than,
- (a) 12.5 mm thick plywood,
  - (b) 12.5 mm thick OSB conforming to O-2 grade,
  - (c) 12.7 mm thick OSB conforming to O-1 grade,
  - (d) 12.7 mm thick waferboard conforming to R-1 grade, or
  - (e) OSB conforming to 2R32 / 2F16 grade.

#### **9.23.14.6. Annular Grooved Nails**

- (1) When resilient flooring is applied directly to an OSB, waferboard, particleboard or plywood subfloor, the subfloor shall be fastened to the supports with annular grooved nails.

#### **9.23.14.7. Lumber Subflooring**

- (1) Lumber subflooring shall be laid at an angle of not less than 45° to the joists.
- (2) Lumber subflooring shall be fully supported at the ends on solid bearing.
- (3) Lumber for subflooring shall be of uniform thickness and not more than 184 mm wide.

### **9.23.15. Roof Sheathing**

#### **9.23.15.1. Required Roof Sheathing**

- (1) Except as provided in Section 9.26., continuous lumber or panel-type roof sheathing shall be installed to support the roofing.

#### **9.23.15.2. Material Standards**

- (1) Wood-based panels used for roof sheathing shall conform to the requirements of,
- r<sub>3</sub> (a) CSA O121, “Douglas Fir Plywood”,
  - (b) CSA O151, “Canadian Softwood Plywood”,
  - (c) CSA O153-M, “Poplar Plywood”,
  - r<sub>5</sub> (d) CSA O325, “Construction Sheathing”, or
  - (e) CSA O437.0, “OSB and Waferboard”.

#### **9.23.15.3. Direction of Installation**

- (1) Plywood roof sheathing shall be installed with the surface grain at right angles to the roof framing.
- r<sub>5</sub> (2) OSB roof sheathing conforming to CSA O325, “Construction Sheathing”, or to O-1 and O-2 grades as specified in CSA O437.0, “OSB and Waferboard”, shall be installed with the direction of face orientation at right angles to the roof framing members.

#### **9.23.15.4. Joints in Panel-Type Sheathing**

- (1) Panel-type sheathing board shall be applied so that joints perpendicular to the roof ridge are staggered where,
  - (a) the sheathing is applied with the surface grain parallel to the roof ridge, and
  - (b) the thickness of the sheathing is such that the edges are required to be supported.

(2) A gap of not less than 2 mm shall be left between sheets of plywood, OSB or waferboard.

### 9.23.15.5. Lumber Roof Sheathing

(1) Lumber roof sheathing shall not be more than 286 mm wide and shall be applied so that all ends are supported with end joints staggered.

### 9.23.15.6. Edge Support

(1) Except as permitted in Sentence (2), where panel-type roof sheathing requires edge support, the support shall consist of,

- (a) metal H clips, or
- (b) not less than 38 mm by 38 mm blocking securely nailed between framing members.

(2) The supports referred to in Sentence (1) are not required when tongued-and-grooved edged panel-type sheathing board is used.

### 9.23.15.7. Thickness or Rating

(1) The thickness or rating of roof sheathing on a flat roof used as a walking deck shall conform to either Table 9.23.14.5.A. or Table 9.23.14.5.B. for subfloors.

(2) The thickness or rating of roof sheathing on a roof not used as a walking deck shall conform to either Table 9.23.15.7.A. or Table 9.23.15.7.B.

r<sub>5</sub>

Table 9.23.15.7.A.  
Thickness of Roof Sheathing  
Forming Part of Sentence 9.23.15.7.(2)

Maximum Spacing of Supports, mm	Plywood and OSB, O-2 Grade Edges Supported Minimum Thickness, mm	Plywood and OSB, O-2 Grade Edges Unsupported Minimum Thickness, mm	OSB, O-1 Grade and Waferboard, R-1 Grade Edges Supported Minimum Thickness, mm	OSB, O-1 Grade and Waferboard, R-1 Grade Edges Unsupported Minimum Thickness, mm	Lumber Minimum Thickness, mm
305	7.5	7.5	9.5	9.5	17.0
406	7.5	9.5	9.5	11.1	17.0
610	9.5	12.5	11.1	12.7	19.0
Column 1	2	3	4	5	6

r<sub>5</sub>

Table 9.23.15.7.B.  
Rating for Roof Sheathing When Applying CSA O325  
Forming Part of Sentence 9.23.15.7.(2)

Maximum Spacing of Supports, mm	Panel Mark - Edges Supported	Panel Mark - Edges Unsupported
406	2R16	1R16
508	2R20	1R20
610	2R24	1R24
Column 1	2	3

- (3) Asphalt-coated or asphalt-impregnated fibreboard not less than 11.1 mm thick conforming to CAN/ULC-S706, “Wood Fibre Thermal Insulation for Buildings”, is permitted to be used as a roof sheathing over supports spaced not more than 406 mm o.c., provided the roofing consists of,
- (a) a continuous sheet of galvanized steel not less than 0.33 mm in thickness, or
  - (b) a continuous sheet of aluminum not less than 0.61 mm in thickness.
- (4) All edges of sheathing described in Sentence (3) shall be supported by blocking or framing.

## 9.23.16. Wall Sheathing

### 9.23.16.1. Required Sheathing

- (1) Exterior walls and gable ends shall be sheathed when the *exterior cladding* requires intermediate fastening between supports or if the *exterior cladding* requires solid backing.

### 9.23.16.2. Thickness, Rating and Material Standards

- (1) Where wall sheathing is required for the purpose of complying with this Section, it shall conform to Table 9.23.16.2.A. or Table 9.23.16.2.B.

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Table 9.23.16.2.A.  
Wall Sheathing Thickness and Specifications  
Forming Part of Sentence 9.23.16.2.(1)

Type of Sheathing	With Supports 406 mm o.c. Minimum Thickness, mm <sup>(1)</sup>	With Supports 610 mm o.c. Minimum Thickness, mm <sup>(1)</sup>	Material Standards
Fibreboard (insulating)	9.5	11.1	CAN/ULC-S706
Gypsum Sheathing	9.5	12.7	CAN/CSA-A82.27-M
			ASTM C1177 / C1177M
			ASTM C1396 / C1396M
Lumber	17.0	17.0	See Table 9.3.2.1.
Mineral Fibre, Rigid Board, Type 2	25	25	CAN/ULC-S702
OSB, O-2 Grade	6.0	7.5	CSA O437.0
OSB, O-1 Grade, and Waferboard, R-1 Grade	6.35	7.9	CSA O437.0
Phenolic, faced	25	25	CAN/CGSB-51.25-M
Plywood (exterior type)	6	7.5	CSA O121
			CSA O151
			CSA O153-M
Polystyrene, Types 1 and 2	38	38	CAN/ULC-S701
Polystyrene, Types 3 and 4	25	25	CAN/ULC-S701
Polyurethane and Polyisocyanurate Type 1, faced	38	38	CAN/ULC-S704
Polyurethane and Polyisocyanurate Types 2 and 3, faced	25	25	CAN/ULC-S704
Column 1	2	3	4

Notes to Table 9.23.16.2.A.:

- (1) See also Sentences 9.27.5.1.(2) to (4).

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Table 9.23.16.2.B.  
Rating For Wall Sheathing When Applying CSA O325  
Forming Part of Sentence 9.23.16.2.(1)

Maximum Spacing of Supports, mm	Panel Mark
406	W16
508	W20
610	W24
Column 1	2

### 9.23.16.3. Attachment of Cladding to Sheathing

- (1) Gypsum sheathing, rigid insulation and fibreboard shall not be used for the attachment of siding materials.
- (2) Nails used in attaching the materials listed in Sentence (1) shall be not less than 3.2 mm diam with a minimum head diameter of 11 mm.

### 9.23.16.4. Lumber Sheathing

- (1) Lumber wall sheathing shall be applied so that all ends are supported.
- (2) Where lumber wall sheathing is required to provide bracing according to Article 9.23.10.2., it shall be applied with end joints staggered.

### 9.23.16.5. Joints in Panel-Type Sheathing

- (1) A gap of not less than 2 mm shall be left between sheets of plywood, OSB, waferboard or fibreboard.

### 9.23.16.6. Mansard Style Roofs

- (1) Where the bottom portions of mansard style roofs are vented, the vertical framing members behind the sloping portions shall be considered on the same basis as exterior wall studs and shall conform to the appropriate requirements in Articles 9.27.3.2. to 9.27.3.6.

## Section 9.24. Sheet Steel Stud Wall Framing

### 9.24.1. General

#### 9.24.1.1. Application

- (1) This Section applies to sheet steel studs for use in non-*loadbearing* exterior and interior walls.
- (2) Where *loadbearing* steel studs are used, they shall be designed in conformance with Part 4.



## 9.29.7. Hardboard Finish

### 9.29.7.1. Material Standard

- (1) Hardboard shall conform to CAN/CGSB-11.3-M, “Hardboard”.

### 9.29.7.2. Thickness

- (1) Hardboard shall be not less than,
  - (a) 3 mm thick where applied over continuous back-up,
  - (b) 6 mm thick where applied to supports spaced not more than 406 mm o.c., and
  - (c) 9 mm thick where applied to supports spaced not more than 610 mm o.c.

### 9.29.7.3. Nails

- (1) Nails for fastening hardboard shall be casing or finishing nails not less than 38 mm long, spaced not more than 150 mm o.c. along edge supports and 300 mm o.c. along intermediate supports.

### 9.29.7.4. Edge Support

- (1) All hardboard edges shall be supported by furring, blocking or framing where the back-up is not continuous.

## 9.29.8. Insulating Fibreboard Finish

### 9.29.8.1. Material Standard

- (1) Insulating fibreboard shall conform to CAN/ULC-S706, “Wood Fibre Thermal Insulation for Buildings”.

### 9.29.8.2. Thickness

- (1) Insulating fibreboard sheets shall be not less than 11.1 mm thick on supports not more than 406 mm o.c.
- (2) Insulating fibreboard tile shall be not less than 12.7 mm thick on supports spaced not more than 406 mm o.c.

### 9.29.8.3. Nails

- (1) Nails for fastening fibreboard sheets shall be not less than 2.6 mm shank diameter casing or finishing nails of sufficient length to penetrate not less than 20 mm into the supports.
- (2) Nails shall be spaced not more than 100 mm o.c. along edge supports and 200 mm o.c. along intermediate supports.

### 9.29.8.4. Edge Support

- (1) All fibreboard edges shall be supported by blocking, furring or framing.

## 9.29.9. Particleboard, OSB or Waferboard Finish

### 9.29.9.1. Material Standard

- (1) Particleboard finish shall conform to ANSI A208.1, "Particleboard".
- (2) OSB or waferboard finish shall conform to,
  - r<sub>5</sub> (a) CSA O325, "Construction Sheathing", or
  - (b) CSA O437.0, "OSB and Waferboard".

### 9.29.9.2. Minimum Thickness

- (1) Except as provided in Sentences (2) and (3), the minimum thickness of O-2 grade OSB used as an interior finish shall conform to that shown for plywood in Table 9.29.6.1.
- (2) Thickness listed in Table 9.29.6.1. shall permit a manufacturing tolerance of -0.4 mm.
- (3) No minimum thickness is required where O-2 grade OSB is applied over continuous backing.
- (4) OSB conforming to O-1 grade, waferboard conforming to R-1 grade and particleboard shall be,
  - (a) not less than 6.35 mm thick on supports not more than 406 mm o.c.,
  - (b) not less than 9.5 mm thick on supports not more than 610 mm o.c., and
  - (c) not less than 6.35 mm thick on supports not more than 610 mm o.c. in walls where blocking is provided at midwall height.
- r<sub>5</sub> (5) OSB conforming to CSA O325, "Construction Sheathing", shall meet the minimum panel mark of,
  - (a) W16, on supports not more than 406 mm o.c.,
  - (b) W24, on supports not more than 610 mm o.c., and
  - (c) W16, on supports not more than 610 mm o.c. where blocking is provided at midwall height.

### 9.29.9.3. Nails

- (1) Nails for fastening particleboard, OSB or waferboard shall be not less than 38 mm casing or finishing nails spaced not more than 150 mm o.c. along edge supports and 300 mm o.c. along intermediate supports.

### 9.29.9.4. Edge Support

- (1) All particleboard, OSB or waferboard edges shall be supported by furring, blocking or framing.

## 9.29.10. Wall Tile Finish

### 9.29.10.1. Tile Application

- (1) Ceramic tile shall be set in a mortar base or applied with an adhesive.
- (2) Plastic tile shall be applied with an adhesive.

### 9.29.10.2. Mortar Base

- (1) When ceramic tile is applied to a mortar base the cementitious material shall consist of one part Portland cement to not more than one-quarter part lime by volume.

- (5) A *supply duct* from the outdoors to the heat recovery ventilator required in Sentence (3) and a main distribution trunk duct shall be provided and shall be sized according to Part 6, except that the *supply duct* and the main distribution trunk duct may be sized according to Table 9.32.3.7.A. where,
- (a) the total duct length from the outdoor hood to any supply register does not exceed 21 m, and
  - (b) the total number of fittings does not exceed 8.

Table 9.32.3.7.A.  
Minimum Outdoor Air Supply and Main Trunk Duct Sizes  
Forming Part of Sentence 9.32.3.7.(5)

Number of Bedrooms in <i>Dwelling Unit</i>	Minimum Outdoor Air Supply and Main Distribution Trunk Duct Diameter, mm
1	150
2	150
3	175
4	175
5	175
More than 5	System must comply with Sentence 6.2.1.1.(1)
Column 1	2

- (6) The outside air *supply duct* required by Sentence (5) shall not be considered to provide combustion and/or dilution air to fuel-burning *appliances*.
- (7) Branch *supply ducts* leading from the main distribution trunk duct required by Sentence (5) to the rooms to which outdoor air is to be distributed shall be provided and shall be sized according to Part 6, except that the branch *supply ducts* may be sized according to Table 9.32.3.7.B. where,
- (a) the total duct length from the outdoor hood to any supply register does not exceed 21 m, and
  - (b) the total number of fittings does not exceed 8.

Table 9.32.3.7.B.  
Minimum Branch Supply Duct Sizes  
Forming Part of Sentence 9.32.3.7.(7)

Room, Space or <i>Storey Served</i>	Minimum Branch <i>Supply Duct</i> Diameter, mm	
	1 and 2 Bedroom <i>Dwelling Units</i>	3, 4 and 5 Bedroom <i>Dwelling Units</i>
Master bedroom	100	100
Other bedrooms	75	75
<i>Storey</i> with no bedrooms or living area	75	100
Column 1	2	3

- (8) In applying Sentence (7), where the *dwelling unit* has more than 5 bedrooms, ducting shall be sized according to Part 6.
- (9) All branch *supply ducts* that are not fitted with diffusers with adjustable balance stops shall be supplied with accessible dampers that can be adjusted and fixed in their adjusted positions and that include devices to indicate the positions of the dampers.
- (10) Provision shall be made for the free flow of air to all rooms by leaving gaps beneath doors, using louvred doors or installing grilles in doors.

### 9.32.3.8. Protection Against Depressurization

- (1) When determining the need to provide protection against depressurization, consideration must be given to,
  - (a) whether the presence of *soil gas* is deemed to be a problem, and
  - (b) the presence of solid fuel-fired combustion *appliances*.
- (2) Where a solid fuel-fired combustion *appliance* is installed, the ventilation system shall include a heat recovery ventilator that is designed to operate so that the flow of exhaust air does not exceed the flow of intake air in any operating mode, and that complies with the requirements of Article 9.32.3.11.
- (3) The provision of make-up air is not required for mechanical exhausting devices operating a subfloor depressurization system installed for the purpose of reducing the risk of radon ingress.

### 9.32.3.9. Fan Ratings

- (1) Except as provided in Sentence (4), capacity ratings for required fans shall be determined in accordance with,
  - (a) CAN/CSA-C260-M, “Rating the Performance of Residential Mechanical Ventilating Equipment”, or
  - (b) HVI 916, “Airflow Test Procedure”.
- (2) Sound ratings for required fans shall be determined in accordance with,
  - (a) CAN/CSA-C260-M, “Rating the Performance of Residential Mechanical Ventilating Equipment”, or
  - (b) HVI 915, “Procedure for Loudness Rating of Residential Fan Products”.
- (3) Capacity ratings for required fans shall be based on a static pressure differential of 50 Pa, 25 Pa or 7.5 Pa depending on whether the fan is installed with ductwork connected on both sides, one side or neither side, respectively.
- (4) Except for heat recovery ventilators, exhaust fans required to make up any part of the total ventilation capacity required by Article 9.32.3.3. shall have a sound rating not greater than that specified in Table 9.32.3.9.

Table 9.32.3.9.  
Fan Sound Rating  
Forming Part of Sentence 9.32.3.9.(4)

Fan Application	Maximum Sound Rating, sones	
	Rated according to CAN/CSA-C260-M	Rated according to HVI 915
Principal exhaust fan	2.0	2.5
Supplemental exhaust fans installed in bathrooms and water closet rooms and their make-up air fans	2.5	3.5
Supplemental exhaust fans installed in kitchens and their make-up air fans	no rating required	no rating required
Column 1	2	3

- (5) Required fans shall be installed according to the manufacturer's instructions.
- r<sub>5</sub> (6) Mechanical ventilation devices shall conform to CSA C22.2 No. 113, “Fans and Ventilators”.

### 9.32.3.10. Ducts

- (1) Ventilation ducts shall conform to the requirements of Part 6 for *supply ducts*, except that *exhaust ducts* that serve only a bathroom or water closet room may be of *combustible* material provided the duct is reasonably airtight and constructed of a material impervious to water.
- (2) *Exhaust ducts* shall not discharge into heated or unheated enclosed spaces.
- (3) Where an *exhaust duct* passes through or is adjacent to unheated space, the duct shall be insulated to not less than RSI 0.5.

- (7) Where air intake and exhaust openings are in exposed locations, provision shall be made to protect them from the entry of precipitation by the use of louvres, weather cowls or other suitable protection.
- (8) Air intake openings shall incorporate screens or grilles to protect against the entry of animals and insects.
- (9) Except for exhaust outlets serving heat recovery ventilators, exhaust outlets shall incorporate backdraft dampers.
- (10) Except for clothes dryers, exhaust outlets shall be fitted with screens of mesh not larger than 15 mm, except where climatic conditions may require larger openings.
- (11) Where a screen or grille required by Sentences (8) and (10) has a screen mesh less than 6 mm, the screen or grille shall be removable for cleaning.
- (12) The gross area of the screens or grilles installed in intake and exhaust openings shall be three times that of the duct served.
- (13) Screens and grilles shall be of corrosion-resistant material.
- (14) The net free area of an air intake or exhaust outlet shall be equal to or greater than the cross-sectional area of the duct served.

### 9.32.3.13. Installation

- (1) Installation of fans and heat recovery ventilators shall be in accordance with manufacturer's instructions for minimizing noise and vibration transmission and achieving the required sound rating.
- (2) Where flow-regulating dampers are required, they shall be adjustable and accessible without requiring the removal of fans, motors, or insulating materials and without the need for specialized tools.
- (3) Ventilation equipment shall be accessible for inspection, maintenance, repair and cleaning.
- (4) Ventilation equipment installed in unheated spaces shall be installed so as to avoid condensation of moisture on fans and motors in accordance with the manufacturer's instructions.

## Section 9.33. Heating and Air-Conditioning

### 9.33.1. General

#### 9.33.1.1. Design and Installation Requirements (See Appendix A.)

- (1) The design and installation of central heating systems, including requirements for combustion air, shall conform to Part 6 and this Section.
- (2) The design and installation of *air-conditioning* systems shall conform to Part 6.
- (3) Repairs or component replacements that change the capacity or extent of safety of an existing heating, ventilating or *air-conditioning* system and that alter the method of operation shall conform to this Code.

### 9.33.1.2. Solid Fuel-Burning Appliances

- r<sub>5</sub> (1) The design, construction and installation, including the provision of combustion air, of solid-fuel burning *appliances* and equipment, including *stoves*, *cooktops* and *space heaters*, shall conform to CSA B365, “Installation Code for Solid-Fuel-Burning Appliances and Equipment”. (See Appendix A.)
- r<sub>3</sub> (2) Solid fuel-burning *stoves*, *furnaces* and hydronic heating systems designed to burn solid fuels, other than coal, shall conform to the particulate emission limits of,
- CSA B415.1, “Performance Testing of Solid-Fuel-Burning Heating Appliances”, or
  - the “Standards of Performance for New Residential Wood Heaters”, set out in Subpart AAA of Part 60 of Title 40 of the Code of Federal Regulations, published by the United States Environmental Protection Agency, as it read on November 1, 2013.

### 9.33.1.3. Structural Movement

- (1) Where the *building* is in a location where the spectral response acceleration,  $S_a(0.2)$ , is greater than 0.55, heating and *air-conditioning* equipment with fuel or power connections shall be secured to the structure to resist overturning and displacement.

## 9.33.2. Required Heating Systems

### 9.33.2.1. Residential Heating Systems

- (1) Residential *buildings* intended for use in the winter months on a continuing basis shall be equipped with heating facilities conforming to this Section.

### 9.33.2.2. Equipment Sizing

- (1) The heating system capacity shall be based on the heating load calculated in accordance with Sentence 6.2.1.1.(1).
- (2) Where a cooling system is installed, the cooling system capacity shall be based on the cooling load calculated in accordance with Sentence 6.2.1.1.(1).
- r<sub>3.1</sub> (3) The heating and cooling equipment capacities shall be determined in accordance with the requirements of CSA F280, “Determining the Required Capacity of Residential Space Heating and Cooling Appliances”.

## 9.33.3. Design Temperatures

### 9.33.3.1. Indoor Design Temperatures

- (1) At the outside design temperature, required heating facilities shall be capable of maintaining an indoor air temperature of not less than,
- 22°C in all living spaces,
  - 22°C in unfinished *basements*, and
  - 15°C in heated crawl spaces.

### 9.38.3.3. Foundations and Anchorage

(1) *Buildings* described in Article 9.38.1.1. shall be supported and anchored in conformance with the manufacturer's installation instructions.

### 9.38.3.4. Proximity to Above Ground Electrical Conductors

(1) *Buildings* described in Article 9.38.1.1. shall comply with Article 9.1.1.5.

## Section 9.39. Reinforced Concrete Slabs (See Appendix A.)

### 9.39.1. Scope

#### 9.39.1.1. Application

- (1) This Section applies to,
  - (a) reinforced concrete slabs that are suspended over cold rooms in *basements*, and are supported by *foundation* walls along the perimeter of the slab with no additional interior supports, and
  - (b) slabs in which the clear span between supporting walls is not more than 2.5 m along the shortest dimension of the slab.
- (2) Slabs for conditions other than described in Sentence (1) shall be designed in accordance with Part 4.
- (3) This Section does not apply to reinforced concrete slabs intended to support motor vehicles.

#### 9.39.1.2. Concrete

(1) Concrete shall conform to Section 9.3.

#### 9.39.1.3. Reinforcing Steel

r<sub>5</sub> (1) Reinforcing steel shall conform to Grade 400 in CSA G30.18, "Carbon Steel Bars for Concrete Reinforcement".

#### 9.39.1.4. Slab Construction

- (1) Concrete shall be cast against form work in accordance with CSA A23.1, "Concrete Materials and Methods of Concrete Construction".
- (2) The slab shall be not less than 125 mm thick.
- (3) The slab shall be reinforced with 10M bars spaced not more than 200 mm o.c. in each direction, with 30 mm clear cover from the bottom of the slab to the first layer of bars, and the second layer of bars laid directly on top of the lower layer in the opposite direction.
- (4) The slab shall bear not less than 75 mm on the supporting *foundation* walls and be anchored to the walls with 600 mm × 600 mm 10M bent dowels spaced at not more than 600 mm o.c.
- (5) Exposed slabs shall be sloped to effectively shed water away from the exterior wall.

## Section 9.40. Additional Requirements for Change of Use

### 9.40.1. Scope

#### 9.40.1.1. Application

- r<sub>1</sub> (1) This Section applies where proposed *construction* in respect of an existing *building* will result in any of the following changes of use of all or part of the *building*:
- (a) a change of the *major occupancy* of all or part of a *building* that is designated with a “Y” in Table 1.3.1.4. of Division C,
  - (b) a *suite* of a Group C *major occupancy* is converted into more than one *suite* of a Group C *major occupancy*,
  - (c) a *farm building* or part of a *farm building* is changed to a *major occupancy*,
  - (d) a *building* or part of a *building* is changed to a *post-disaster building*,
  - (e) a *building* or part of a *building* is changed to a retirement home regulated under the *Retirement Homes Act, 2010*, or
  - (f) the use of a *building* or part of a *building* is changed and the previous *major occupancy* of the *building* or part of the *building* cannot be determined.
- r<sub>1</sub> (2) For the purposes of this Section and Sentences 11.4.2.1.(1) and 11.4.2.5.(4), the changes of use set out in Clauses (1)(b) to (f) are also deemed to constitute a change in *major occupancy*.
- (3) The requirements of this Section are in addition to the requirements of other Parts of the Code as they apply to the proposed *construction*.

### 9.40.2. Additional Construction

#### 9.40.2.1. Change of Use and Compensating Construction

- r<sub>1</sub> (1) Where proposed *construction* will result in a change of use described in Clauses 9.40.1.1.(1)(a) to (e), additional *construction* shall be required in order that the *building* or part of a *building* subject to the change of use conforms to the requirements of Subsections 9.5.1. and 9.5.3. to 9.5.10., Section 9.6., Article 9.7.2.3. Sentences 9.7.5.1.(2) and 9.7.6.2.(1) and (3), Articles 9.8.8.1. and 9.9.10.1., Subsection 9.10.17. and Sections 9.31., 9.32. and 9.34. as they apply to the new *major occupancy* that the *building* or part of a *building* is to support.
- (2) For the purposes of this Article, existing *buildings* shall be classified as to their *construction* and *occupancy* as provided for in Sentence 11.2.1.1.(1).

#### 9.40.2.2. Performance Level Evaluation and Compensating Construction

- (1) The *performance level* of a *building* after *construction* shall not be less than the *performance level* of the *building* prior to *construction*.
- (2) For the purposes of Sentence (1), reduction of *performance level* shall be determined in accordance with Articles 11.4.2.1., 11.4.2.3. and 11.4.2.5.
- (3) Where the proposed *construction* would reduce the *performance level* of an existing *building*, compensating *construction* shall be required in conformance with Articles 11.4.3.1., 11.4.3.2., 11.4.3.4. and 11.4.3.6.
- (4) Section 11.5. applies in respect of the requirements of Sentences 11.4.3.4.(1), (3) and (4).



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**Table A-8**  
**Maximum Spans for Built-up Floor Beams Supporting Not More than One Floor<sup>(1)(2)</sup>**  
**Forming Part of Sentence 9.23.4.2.(3)**

Commercial Designation	Grade	Supported Length, m <sup>(3)(4)</sup>	Maximum Span, m <sup>(5)(6)</sup>								
			Size of Built-up Beam, mm								
			3 – 38 × 184	4 – 38 × 184	5 – 38 × 184	3 – 38 × 235	4 – 38 × 235	5 – 38 × 235	3 – 38 × 286	4 – 38 × 286	5 – 38 × 286
Douglas Fir – Larch (includes Douglas Fir and Western Larch)	Select Structural	2.4	3.36	3.70	3.99	4.30	4.73	5.09	5.23	5.66	5.99
		3.0	3.12	3.44	3.70	3.99	4.39	4.73	4.84	5.34	5.66
		3.6	2.94	3.23	3.48	3.75	4.13	4.45	4.41	5.03	5.41
		4.2	2.79	3.07	3.31	3.52	3.92	4.23	4.09	4.72	5.14
		4.8	2.67	2.94	3.17	3.29	3.75	4.04	3.82	4.41	4.92
		5.4	2.54	2.83	3.04	3.11	3.59	3.89	3.60	4.16	4.65
	No. 1 and No. 2	2.4	2.97	3.42	3.82	3.63	4.19	4.68	4.21	4.86	5.43
		3.0	2.65	3.06	3.42	3.24	3.75	4.19	3.76	4.35	4.86
		3.6	2.42	2.80	3.13	2.96	3.42	3.82	3.44	3.97	4.44
		4.2	2.24	2.59	2.89	2.74	3.17	3.54	3.18	3.67	4.11
		4.8	2.10	2.42	2.71	2.56	2.96	3.31	2.98	3.44	3.84
		5.4	1.98	2.28	2.55	2.42	2.79	3.12	2.81	3.24	3.62
Hem – Fir (includes Western Hemlock and Amabilis Fir)	Select Structural	2.4	3.32	3.65	3.93	4.24	4.66	5.03	5.16	5.61	5.93
		3.0	3.08	3.39	3.65	3.93	4.33	4.66	4.76	5.27	5.61
		3.6	2.90	3.19	3.44	3.70	4.08	4.39	4.35	4.96	5.34
		4.2	2.75	3.03	3.27	3.47	3.87	4.17	4.02	4.65	5.07
		4.8	2.63	2.90	3.12	3.24	3.70	3.99	3.66	4.35	4.85
		5.4	2.49	2.79	3.00	2.95	3.53	3.83	3.32	4.10	4.58
	No. 1 and No. 2	2.4	3.11	3.55	3.82	3.80	4.39	4.88	4.41	5.10	5.70
		3.0	2.78	3.21	3.55	3.40	3.93	4.39	3.95	4.56	5.10
		3.6	2.54	2.93	3.28	3.11	3.59	4.01	3.60	4.16	4.65
		4.2	2.35	2.72	3.04	2.88	3.32	3.71	3.34	3.85	4.31
		4.8	2.20	2.54	2.84	2.69	3.11	3.47	3.12	3.60	4.03
		5.4	2.07	2.39	2.68	2.54	2.93	3.27	2.94	3.40	3.80
6.0	1.97	2.27	2.54	2.41	2.78	3.11	2.79	3.22	3.60		
Column 1	2	3	4	5	6	7	8	9	10	11	12

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Table A-8 (Cont'd)  
 Maximum Spans for Built-up Floor Beams Supporting Not More than One Floor<sup>(1)(2)</sup>  
 Forming Part of Sentence 9.23.4.2.(3)

Commercial Designation	Grade	Supported Length, m <sup>(3)(4)</sup>	Maximum Span, m <sup>(5)(6)</sup>								
			Size of Built-up Beam, mm								
			3 – 38 × 184	4 – 38 × 184	5 – 38 × 184	3 – 38 × 235	4 – 38 × 235	5 – 38 × 235	3 – 38 × 286	4 – 38 × 286	5 – 38 × 286
Spruce – Pine – Fir (includes Spruce (all species except Coast Sitka Spruce), Jack Pine, Lodgepole Pine, Balsam Fir and Alpine Fir)	Select Structural	2.4	3.17	3.49	3.76	4.05	4.46	4.81	4.93	5.42	5.73
		3.0	2.95	3.24	3.49	3.76	4.14	4.46	4.58	5.04	5.42
		3.6	2.77	3.05	3.29	3.54	3.90	4.20	4.31	4.74	5.11
		4.2	2.63	2.90	3.12	3.36	3.70	3.99	4.09	4.51	4.85
		4.8	2.52	2.77	2.99	3.22	3.54	3.81	3.82	4.31	4.64
		5.4	2.42	2.67	2.87	3.09	3.41	3.67	3.60	4.14	4.46
	No. 1 and No. 2	6.0	2.34	2.57	2.77	2.95	3.29	3.54	3.32	3.95	4.31
		2.4	3.07	3.38	3.64	3.92	4.32	4.65	4.57	5.25	5.59
		3.0	2.85	3.14	3.38	3.52	4.01	4.32	4.09	4.72	5.25
		3.6	2.63	2.95	3.18	3.22	3.71	4.06	3.73	4.31	4.82
		4.2	2.44	2.80	3.02	2.98	3.44	3.84	3.46	3.99	4.46
		4.8	2.28	2.63	2.89	2.79	3.22	3.60	3.23	3.73	4.17
Northern Species (includes any Canadian species covered by the NLGA Standard Grading Rules)	Select Structural	5.4	2.15	2.48	2.77	2.63	3.03	3.39	3.05	3.52	3.93
		6.0	2.04	2.35	2.63	2.49	2.88	3.22	2.89	3.34	3.73
		2.4	2.84	3.12	3.36	3.62	3.99	4.30	4.33	4.85	5.23
		3.0	2.63	2.90	3.12	3.34	3.70	3.99	3.88	4.47	4.85
		3.6	2.48	2.73	2.94	3.05	3.48	3.75	3.54	4.08	4.57
		4.2	2.31	2.59	2.79	2.82	3.26	3.57	3.28	3.78	4.23
	No. 1 and No. 2	4.8	2.16	2.48	2.67	2.64	3.05	3.41	3.06	3.54	3.96
		5.4	2.04	2.35	2.57	2.49	2.87	3.21	2.89	3.34	3.73
		6.0	1.93	2.23	2.48	2.36	2.73	3.05	2.74	3.16	3.54
		2.4	2.59	2.99	3.29	3.16	3.65	4.08	3.67	4.24	4.74
		3.0	2.31	2.67	2.99	2.83	3.27	3.65	3.28	3.79	4.24
		3.6	2.11	2.44	2.73	2.58	2.98	3.33	3.00	3.46	3.87
		4.2	1.95	2.26	2.52	2.39	2.76	3.09	2.77	3.20	3.58
		4.8	1.83	2.11	2.36	2.24	2.58	2.89	2.59	3.00	3.35
		5.4	1.72	1.99	2.23	2.11	2.43	2.72	2.45	2.82	3.16
		6.0	1.64	1.89	2.11	2.00	2.31	2.58	2.32	2.68	3.00
Column 1	2	3	4	5	6	7	8	9	10	11	12

Notes to Table A-8:

- (1) Beam spans apply only where the floors serve residential areas as described in Table 4.1.5.3., or the uniformly distributed *live load* on the floors does not exceed that specified for residential areas as described in Table 4.1.5.3.
- (2) When the floors have a concrete topping of not more than 51 mm, the spans must be multiplied by 0.8.
- (3) Supported length means half the sum of the joists spans on both sides of the beam.
- (4) Straight interpolation may be used for other supported lengths.
- (5) Spans are clear spans between supports. For total span, add two bearing lengths.
- (6) 3-ply beams with supported lengths greater than 4.2 m require minimum bearing length of 114 mm. All other beams require minimum bearing length of 76 mm.

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**Table A-9**  
**Maximum Spans for Built-up Floor Beams Supporting Not More than Two Floors<sup>(1)(2)</sup>**  
**Forming Part of Sentence 9.23.4.2.(3)**

Commercial Designation	Grade	Supported Length, m <sup>(3)(4)</sup>	Maximum Span, m <sup>(5)(6)</sup>								
			Size of Built-up Beam, mm								
			3 – 38 × 184	4 – 38 × 184	5 – 38 × 184	3 – 38 × 235	4 – 38 × 235	5 – 38 × 235	3 – 38 × 286	4 – 38 × 286	5 – 38 × 286
Douglas Fir – Larch (includes Douglas Fir and Western Larch)	Select Structural	2.4	2.80	3.08	3.32	3.49	3.93	4.24	4.05	4.67	5.16
		3.0	2.55	2.86	3.08	3.12	3.60	3.93	3.62	4.18	4.67
		3.6	2.33	2.69	2.90	2.85	3.29	3.68	3.30	3.82	4.27
		4.2	2.16	2.49	2.75	2.64	3.04	3.40	2.99	3.53	3.95
		4.8	2.00	2.33	2.60	2.38	2.85	3.18	2.69	3.30	3.69
		5.4	1.82	2.20	2.45	2.17	2.68	3.00	2.45	3.08	3.48
		6.0	1.67	2.08	2.33	2.00	2.51	2.85	2.26	2.83	3.30
	No. 1 and No. 2	2.4	2.22	2.56	2.87	2.72	3.14	3.51	3.15	3.64	4.07
		3.0	1.99	2.29	2.56	2.43	2.80	3.14	2.82	3.25	3.64
		3.6	1.81	2.09	2.34	2.22	2.56	2.86	2.57	2.97	3.32
		4.2	1.68	1.94	2.17	2.05	2.37	2.65	2.38	2.75	3.07
		4.8	1.57	1.81	2.03	1.92	2.22	2.48	2.23	2.57	2.88
		5.4	1.48	1.71	1.91	1.81	2.09	2.34	2.10	2.43	2.71
		6.0	1.40	1.62	1.81	1.72	1.98	2.22	1.99	2.30	2.57
Hem – Fir (includes Western Hemlock and Amabilis Fir)	Select Structural	2.4	2.76	3.04	3.27	3.43	3.88	4.18	3.99	4.60	5.09
		3.0	2.51	2.82	3.04	2.97	3.55	3.88	3.34	4.12	4.60
		3.6	2.15	2.65	2.86	2.56	3.24	3.62	2.88	3.65	4.20
		4.2	1.90	2.40	2.72	2.26	2.85	3.35	2.55	3.21	3.87
		4.8	1.70	2.15	2.56	2.03	2.56	3.08	2.30	2.88	3.46
		5.4	1.56	1.95	2.35	1.86	2.32	2.79	2.11	2.62	3.14
		6.0	1.44	1.79	2.15	1.72	2.14	2.56	1.96	2.42	2.88
	No. 1 and No. 2	2.4	2.33	2.69	3.01	2.85	3.29	3.68	3.30	3.82	4.27
		3.0	2.08	2.41	2.69	2.55	2.94	3.29	2.96	3.41	3.82
		3.6	1.90	2.20	2.45	2.33	2.68	3.00	2.70	3.12	3.48
		4.2	1.76	2.03	2.27	2.15	2.49	2.78	2.50	2.88	3.22
		4.8	1.65	1.90	2.13	2.01	2.33	2.60	2.30	2.70	3.02
		5.4	1.55	1.79	2.00	1.86	2.19	2.45	2.11	2.54	2.84
		6.0	1.44	1.70	1.90	1.72	2.08	2.33	1.96	2.41	2.70
Column 1	2	3	4	5	6	7	8	9	10	11	12

F<sub>3</sub>  
F<sub>5</sub>

Table A-9 (Cont'd)  
Maximum Spans for Built-up Floor Beams Supporting Not More than Two Floors<sup>(1)(2)</sup>  
Forming Part of Sentence 9.23.4.2.(3)

Commercial Designation	Grade	Supported Length, m <sup>(3)(4)</sup>	Maximum Span, m <sup>(5)(6)</sup>								
			Size of Built-up Beam, mm								
			3 – 38 × 184	4 – 38 × 184	5 – 38 × 184	3 – 38 × 235	4 – 38 × 235	5 – 38 × 235	3 – 38 × 286	4 – 38 × 286	5 – 38 × 286
Spruce – Pine – Fir (includes Spruce (all species except Coast Sitka Spruce), Jack Pine, Lodgepole Pine, Balsam Fir and Alpine Fir)	Select Structural	2.4	2.64	2.91	3.13	3.37	3.71	4.00	4.05	4.52	4.87
		3.0	2.45	2.70	2.91	3.12	3.45	3.71	3.62	4.18	4.52
		3.6	2.31	2.54	2.73	2.79	3.24	3.49	3.14	3.82	4.25
		4.2	2.07	2.41	2.60	2.46	3.04	3.32	2.77	3.50	3.95
		4.8	1.85	2.31	2.48	2.21	2.79	3.17	2.50	3.14	3.69
		5.4	1.69	2.13	2.39	2.02	2.53	3.00	2.28	2.85	3.42
	6.0	1.56	1.95	2.31	1.86	2.32	2.79	2.11	2.62	3.14	
	No. 1 and No. 2	2.4	2.41	2.79	3.03	2.95	3.41	3.81	3.42	3.95	4.42
		3.0	2.16	2.49	2.79	2.64	3.05	3.41	3.06	3.53	3.95
		3.6	1.97	2.27	2.54	2.41	2.78	3.11	2.79	3.23	3.61
		4.2	1.82	2.11	2.35	2.23	2.57	2.88	2.59	2.99	3.34
		4.8	1.71	1.97	2.20	2.09	2.41	2.69	2.42	2.79	3.12
5.4		1.61	1.86	2.08	1.97	2.27	2.54	2.28	2.63	2.95	
6.0	1.53	1.76	1.97	1.86	2.15	2.41	2.11	2.50	2.79		
Northern Species (includes any Canadian species covered by the NLGA Standard Grading Rules)	Select Structural	2.4	2.29	2.60	2.80	2.80	3.23	3.57	3.24	3.75	4.19
		3.0	2.04	2.36	2.60	2.50	2.89	3.23	2.90	3.35	3.75
		3.6	1.87	2.16	2.41	2.28	2.64	2.95	2.65	3.06	3.42
		4.2	1.73	2.00	2.23	2.11	2.44	2.73	2.45	2.83	3.17
		4.8	1.62	1.87	2.09	1.98	2.28	2.55	2.29	2.65	2.96
		5.4	1.52	1.76	1.97	1.86	2.15	2.41	2.11	2.50	2.79
	6.0	1.44	1.67	1.87	1.72	2.04	2.28	1.96	2.37	2.65	
	No. 1 and No. 2	2.4	1.94	2.24	2.50	2.37	2.73	3.06	2.75	3.17	3.55
		3.0	1.73	2.00	2.24	2.12	2.44	2.73	2.46	2.84	3.17
		3.6	1.58	1.83	2.04	1.93	2.23	2.50	2.24	2.59	2.90
		4.2	1.46	1.69	1.89	1.79	2.07	2.31	2.08	2.40	2.68
		4.8	1.37	1.58	1.77	1.67	1.93	2.16	1.94	2.24	2.51
5.4		1.29	1.49	1.67	1.58	1.82	2.04	1.83	2.11	2.36	
6.0	1.22	1.41	1.58	1.50	1.73	1.93	1.74	2.01	2.24		
Column 1	2	3	4	5	6	7	8	9	10	11	12

Notes to Table A-9:

- (1) Beam spans apply only where the floors serve residential areas as described in Table 4.1.5.3., or the uniformly distributed *live load* on the floors does not exceed that specified for residential areas as described in Table 4.1.5.3.
- (2) When the floors have a concrete topping of not more than 51 mm, the spans must be multiplied by 0.8.
- (3) Supported length means half the sum of the joists spans on both sides of the beam.
- (4) Straight interpolation may be used for other supported lengths.
- (5) Spans are clear spans between supports. For total span, add two bearing lengths.
- (6) 3-ply beams require minimum bearing length of 114 mm. 4-ply and 5-ply beams with supported lengths greater than 3 m require minimum bearing length of 114 mm. All other beams require minimum bearing length of 76 mm.

**F<sub>5</sub>**

**Table A-10**  
**Maximum Spans for Built-up Floor Beams Supporting Not More than Three Floors<sup>(1)(2)</sup>**  
**Forming Part of Sentence 9.23.4.2.(3)**

Commercial Designation	Grade	Supported Length, m <sup>(3)(4)</sup>	Maximum Span, m <sup>(5)(6)</sup>								
			Size of Built-up Beam, mm								
			3 – 38 × 184	4 – 38 × 184	5 – 38 × 184	3 – 38 × 235	4 – 38 × 235	5 – 38 × 235	3 – 38 × 286	4 – 38 × 286	5 – 38 × 286
Douglas Fir – Larch (includes Douglas Fir and Western Larch)	Select Structural	2.4	2.38	2.74	2.95	2.91	3.36	3.75	3.37	3.89	4.35
		3.0	2.13	2.46	2.74	2.60	3.00	3.36	2.92	3.48	3.89
		3.6	1.88	2.24	2.51	2.24	2.74	3.06	2.53	3.18	3.56
		4.2	1.66	2.08	2.32	1.99	2.49	2.84	2.25	2.81	3.29
		4.8	1.50	1.88	2.17	1.80	2.24	2.65	2.04	2.53	3.02
		5.4	1.38	1.71	2.05	1.65	2.04	2.44	1.88	2.31	2.75
		6.0	1.28	1.58	1.88	1.53	1.89	2.24	1.75	2.14	2.53
	No. 1 and No. 2	2.4	1.85	2.14	2.39	2.26	2.61	2.92	2.63	3.03	3.39
		3.0	1.66	1.91	2.14	2.02	2.34	2.61	2.35	2.71	3.03
		3.6	1.51	1.74	1.95	1.85	2.13	2.39	2.14	2.48	2.77
		4.2	1.40	1.62	1.81	1.71	1.98	2.21	1.99	2.29	2.56
		4.8	1.31	1.51	1.69	1.60	1.85	2.07	1.86	2.14	2.40
		5.4	1.23	1.42	1.59	1.51	1.74	1.95	1.75	2.02	2.26
		6.0	1.17	1.35	1.51	1.43	1.65	1.85	1.66	1.92	2.14
Hem – Fir (includes Western Hemlock and Amabilis Fir)	Select Structural	2.4	2.22	2.70	2.91	2.64	3.31	3.70	2.98	3.78	4.29
		3.0	1.85	2.35	2.70	2.21	2.79	3.31	2.50	3.14	3.78
		3.6	1.61	2.02	2.43	1.92	2.40	2.89	2.18	2.71	3.24
		4.2	1.43	1.78	2.14	1.71	2.13	2.54	1.95	2.40	2.86
		4.8	1.30	1.61	1.92	1.56	1.92	2.28	1.77	2.18	2.58
		5.4	1.19	1.47	1.74	1.44	1.76	2.08	1.64	2.00	2.35
		6.0	1.11	1.36	1.61	1.34	1.63	1.92	1.53	1.85	2.18
	No. 1 and No. 2	2.4	1.94	2.24	2.51	2.37	2.74	3.06	2.75	3.18	3.56
		3.0	1.74	2.00	2.24	2.12	2.45	2.74	2.46	2.84	3.18
		3.6	1.58	1.83	2.05	1.92	2.24	2.50	2.18	2.60	2.90
		4.2	1.43	1.69	1.89	1.71	2.07	2.32	1.95	2.40	2.69
		4.8	1.30	1.58	1.77	1.56	1.92	2.17	1.77	2.18	2.51
		5.4	1.19	1.47	1.67	1.44	1.76	2.04	1.64	2.00	2.35
		6.0	1.11	1.36	1.58	1.34	1.63	1.92	1.53	1.85	2.18
Column 1	2	3	4	5	6	7	8	9	10	11	12

F5

Table A-10 (Cont'd)  
 Maximum Spans for Built-up Floor Beams Supporting Not More than Three Floors<sup>(1)(2)</sup>  
 Forming Part of Sentence 9.23.4.2.(3)

Commercial Designation	Grade	Supported Length, m <sup>(3)(4)</sup>	Maximum Span, m <sup>(5)(6)</sup>								
			Size of Built-up Beam, mm								
			3 – 38 × 184	4 – 38 × 184	5 – 38 × 184	3 – 38 × 235	4 – 38 × 235	5 – 38 × 235	3 – 38 × 286	4 – 38 × 286	5 – 38 × 286
Spruce – Pine – Fir (includes Spruce (all species except Coast Sitka Spruce), Jack Pine, Lodgepole Pine, Balsam Fir and Alpine Fir)	Select Structural	2.4	2.35	2.58	2.78	2.89	3.30	3.55	3.24	3.89	4.33
		3.0	2.02	2.40	2.58	2.40	3.00	3.30	2.71	3.42	3.89
		3.6	1.74	2.20	2.43	2.08	2.62	3.06	2.35	2.95	3.54
		4.2	1.55	1.94	2.31	1.85	2.31	2.77	2.10	2.61	3.12
		4.8	1.40	1.74	2.09	1.68	2.08	2.48	1.91	2.35	2.80
		5.4	1.28	1.59	1.90	1.54	1.90	2.26	1.76	2.16	2.55
	No. 1 and No. 2	6.0	1.19	1.47	1.74	1.44	1.76	2.08	1.64	2.00	2.35
		2.4	2.01	2.32	2.60	2.46	2.84	3.17	2.85	3.29	3.68
		3.0	1.80	2.08	2.32	2.20	2.54	2.84	2.55	2.95	3.29
		3.6	1.64	1.90	2.12	2.01	2.32	2.59	2.33	2.69	3.01
		4.2	1.52	1.75	2.96	1.85	2.15	2.40	2.10	2.49	2.78
		4.8	1.40	1.64	1.84	1.68	2.01	2.24	1.91	2.33	2.60
Northern Species (includes any Canadian species covered by the NLGA Standard Grading Rules)	Select Structural	5.4	1.28	1.55	1.73	1.54	1.89	2.12	1.76	2.16	2.46
		6.0	1.19	1.47	1.64	1.44	1.76	2.01	1.64	2.00	2.33
		2.4	1.91	2.20	2.46	2.33	2.69	3.01	2.70	3.12	3.49
		3.0	1.70	1.97	2.20	2.08	2.41	2.69	2.42	2.79	3.12
		3.6	1.56	1.80	2.01	1.90	2.20	2.46	2.18	2.55	2.85
		4.2	1.43	1.66	1.86	1.71	2.03	2.27	1.95	2.36	2.64
	No. 1 and No. 2	4.8	1.30	1.56	1.74	1.56	1.90	2.13	1.77	2.18	2.47
		5.4	1.19	1.47	1.64	1.44	1.76	2.01	1.64	2.00	2.33
		6.0	1.11	1.36	1.56	1.34	1.63	1.90	1.53	1.85	2.18
		2.4	1.61	1.86	2.08	1.97	2.28	2.55	2.29	2.64	2.96
		3.0	1.44	1.67	1.86	1.76	2.04	2.28	2.05	2.36	2.64
		3.6	1.32	1.52	1.70	1.61	1.86	2.08	1.87	2.16	2.41
	4.2	1.22	1.41	1.57	1.49	1.72	1.93	1.73	2.00	2.23	
	4.8	1.14	1.32	1.47	1.40	1.61	1.80	1.62	1.87	2.09	
	5.4	1.08	1.24	1.39	1.32	1.52	1.70	1.53	1.76	1.97	
	6.0	1.02	1.18	1.32	1.25	1.44	1.61	1.45	1.67	1.87	
Column 1	2	3	4	5	6	7	8	9	10	11	12

Notes to Table A-10:

- (1) Beam spans apply only where the floors serve residential areas as described in Table 4.1.5.3., or the uniformly distributed *live load* on the floors does not exceed that specified for residential areas as described in Table 4.1.5.3.
- (2) When the floors have a concrete topping of not more than 51 mm, the spans must be multiplied by 0.8.
- (3) Supported length means half the sum of the joists spans on both sides of the beam.
- (4) Straight interpolation may be used for other supported lengths.
- (5) Spans are clear spans between supports. For total span, add two bearing lengths.
- (6) 3-ply beams with supported lengths greater than 4.2 m require minimum bearing length of 152 mm. All other beams require minimum bearing length of 114 mm.

Table A-13  
Maximum Spans for Douglas Fir – Larch Lintels – No. 1 or No. 2 Grade – Non-Structural Sheathing<sup>(1)</sup>  
Forming Part of Sentences 9.23.12.3.(1) and (3) and 9.37.3.1.(1)

Lintel Supporting	Lintel Size, mm <sup>(2)</sup>	Maximum Span, m <sup>(3)(4)</sup>						Interior Walls
		Exterior Walls						
		Specified Snow Load, kPa						
		1.0	1.5	2.0	2.5	3.0		
Limited attic storage and ceiling	2 – 38 × 89	This Area Intentionally Left Blank					1.25	
	2 – 38 × 140						1.78	
	2 – 38 × 184						2.17	
	2 – 38 × 235						2.65	
	2 – 38 × 286						3.08	
Roof and ceiling only (tributary width of 0.6 m maximum) <sup>(5)</sup>	2 – 38 × 89	2.68	2.34	2.13	1.97	1.86	1.97	
	2 – 38 × 140	4.21	3.68	3.34	3.10	2.92	3.10	
	2 – 38 × 184	5.50	4.84	4.39	4.08	3.84	4.08	
	2 – 38 × 235	6.61	5.97	5.56	5.21	4.88	5.21	
	2 – 38 × 286	7.66	6.92	6.44	6.09	5.66	6.09	
Roof and ceiling only (tributary width of 4.9 m maximum) <sup>(6)</sup>	2 – 38 × 89	1.25	1.07	0.96	0.87	0.80	0.87	
	2 – 38 × 140	1.78	1.53	1.36	1.24	1.15	1.24	
	2 – 38 × 184	2.17	1.86	1.66	1.51	1.40	1.51	
	2 – 38 × 235	2.65	2.28	2.03	1.85	1.71	1.85	
	2 – 38 × 286	3.08	2.64	2.35	2.14	1.98	2.14	
Roof, ceiling and 1 storey <sup>(3)(6)(7)</sup>	2 – 38 × 89	0.96	0.88	0.82	0.77	0.73	0.68	
	2 – 38 × 140	1.37	1.26	1.17	1.10	1.04	0.97	
	2 – 38 × 184	1.67	1.53	1.42	1.34	1.26	1.18	
	2 – 38 × 235	2.04	1.88	1.74	1.63	1.54	1.44	
	2 – 38 × 286	2.37	2.18	2.02	1.90	1.79	1.67	
Roof, ceiling and 2 storeys <sup>(3)(6)(7)</sup>	2 – 38 × 89	0.86	0.81	0.77	0.73	0.70	0.61	
	2 – 38 × 140	1.23	1.16	1.09	1.04	0.99	0.87	
	2 – 38 × 184	1.50	1.41	1.33	1.27	1.21	1.06	
	2 – 38 × 235	1.84	1.72	1.63	1.55	1.48	1.30	
	2 – 38 × 286	2.13	2.00	1.89	1.80	1.72	1.51	
Roof, ceiling and 3 storeys <sup>(3)(6)(7)</sup>	2 – 38 × 89	0.81	0.77	0.73	0.71	0.68	0.57	
	2 – 38 × 140	1.15	1.10	1.05	1.01	0.97	0.82	
	2 – 38 × 184	1.40	1.33	1.28	1.22	1.18	1.00	
	2 – 38 × 235	1.71	1.63	1.56	1.50	1.44	1.22	
	2 – 38 × 286	1.99	1.89	1.81	1.74	1.67	1.41	
Column 1	2	3	4	5	6	7	8	

**Notes to Table A-13:**

- rs (1) Where structural sheathing is used, lintel spans may be increased by 15%. Structural sheathing consists of a minimum 9.5 mm thick structural panel conforming to CSA O121, CSA O151, CSA O325 or CSA O437.0 fastened with at least two rows of fasteners to the exterior face of the lintel, and a single row to the top plates and studs. Fasteners shall conform to Table 9.23.3.5.
- (2) A single piece of 89 mm thick lumber may be used in lieu of 2 pieces of 38 mm thick lumber on edge.
- (3) If floor joists span the full width of the *building* without support, lintel spans shall be reduced by 15% for "Roof, ceiling and 1 storey", by 20% for "Roof, ceiling and 2 storeys", and by 25% for "Roof, ceiling and 3 storeys".
- (4) For ends of lintels fully supported by walls, provide minimum bearing length of 38 mm for lintel spans up to 3 m, or minimum bearing length of 76 mm for lintel spans greater than 3 m.
- (5) Spans for 0.6 m tributary width are calculated for lintels in end walls that support only a 0.6 m width of roof and ceiling, but do not support roof joists, roof rafters or roof trusses.
- (6) Lintel spans are calculated based on a maximum floor joist, roof joist or rafter span of 4.9 m and a maximum roof truss span of 9.8 m. Lintel spans may be increased by 5% if rafter and joist spans are not more than 4.3 m and roof truss spans are not more than 8.6 m. Spans may be increased by 10% if rafter and joist spans are not more than 3.7 m and roof trusses are not more than 7.4 m.
- (7) Spans apply only where the floors serve residential areas as described in Table 4.1.5.3., or the uniformly distributed *live load* does not exceed that specified for residential areas as described in Table 4.1.5.3.

Table A-14  
Maximum Spans for Hem – Fir Lintels – No. 1 or No. 2 Grade – Non-Structural Sheathing<sup>(1)</sup>  
Forming Part of Sentences 9.23.12.3.(1) and (3) and 9.37.3.1.(1)

Lintel Supporting	Lintel Size, mm <sup>(2)</sup>	Maximum Span, m <sup>(3)(4)</sup>						Interior Walls
		Exterior Walls						
		Specified Snow Load, kPa						
		1.0	1.5	2.0	2.5	3.0		
Limited attic storage and ceiling	2 – 38 × 89	This Area Intentionally Left Blank					1.31	
	2 – 38 × 140						1.87	
	2 – 38 × 184						2.27	
	2 – 38 × 235						2.78	
	2 – 38 × 286						3.23	
Roof and ceiling only (tributary width of 0.6 m maximum) <sup>(5)</sup>	2 – 38 × 89	2.68	2.34	2.13	1.97	1.86	1.97	
	2 – 38 × 140	4.21	3.68	3.34	3.10	2.92	3.10	
	2 – 38 × 184	5.50	4.84	4.39	4.08	3.84	4.08	
	2 – 38 × 235	6.61	5.97	5.56	5.21	4.90	5.21	
	2 – 38 × 286	7.66	6.92	6.44	6.09	5.82	6.09	
Roof and ceiling only (tributary width of 4.9 m maximum) <sup>(6)</sup>	2 – 38 × 89	1.31	1.13	1.00	0.91	0.84	0.91	
	2 – 38 × 140	1.87	1.61	1.43	1.30	1.20	1.30	
	2 – 38 × 184	2.27	1.95	1.74	1.58	1.42	1.58	
	2 – 38 × 235	2.78	2.39	2.13	1.92	1.71	1.92	
	2 – 38 × 286	3.23	2.77	2.47	2.17	1.94	2.17	
Roof, ceiling and 1 storey <sup>(3)(6)(7)</sup>	2 – 38 × 89	1.01	0.93	0.86	0.81	0.76	0.69	
	2 – 38 × 140	1.44	1.32	1.23	1.14	1.05	0.95	
	2 – 38 × 184	1.75	1.61	1.47	1.34	1.23	1.12	
	2 – 38 × 235	2.14	1.96	1.76	1.60	1.48	1.35	
	2 – 38 × 286	2.49	2.22	2.00	1.82	1.69	1.55	
Roof, ceiling and 2 storeys <sup>(3)(6)(7)</sup>	2 – 38 × 89	0.91	0.85	0.80	0.76	0.72	0.60	
	2 – 38 × 140	1.29	1.21	1.13	1.05	0.98	0.82	
	2 – 38 × 184	1.57	1.44	1.33	1.24	1.16	0.98	
	2 – 38 × 235	1.90	1.73	1.60	1.49	1.40	1.19	
	2 – 38 × 286	2.15	1.97	1.82	1.70	1.60	1.37	
Roof, ceiling and 3 storeys <sup>(3)(6)(7)</sup>	2 – 38 × 89	0.85	0.81	0.77	0.74	0.69	0.55	
	2 – 38 × 140	1.21	1.14	1.06	1.00	0.95	0.76	
	2 – 38 × 184	1.43	1.33	1.25	1.18	1.12	0.91	
	2 – 38 × 235	1.72	1.60	1.50	1.42	1.35	1.10	
	2 – 38 × 286	1.95	1.82	1.72	1.63	1.55	1.27	
Column 1	2	3	4	5	6	7	8	

## Notes to Table A-14:

- 15 (1) Where structural sheathing is used, lintel spans may be increased by 15%. Structural sheathing consists of a minimum 9.5 mm thick structural panel conforming to CSA O121, CSA O151, CSA O325 or CSA O437.0 fastened with at least two rows of fasteners to the exterior face of the lintel, and a single row to the top plates and studs. Fasteners shall conform to Table 9.23.3.5.
- (2) A single piece of 89 mm thick lumber may be used in lieu of 2 pieces of 38 mm thick lumber on edge.
- (3) If floor joists span the full width of the *building* without support, lintel spans shall be reduced by 15% for “Roof, ceiling and 1 storey”, by 20% for “Roof, ceiling and 2 storeys”, and by 25% for “Roof, ceiling and 3 storeys”.
- (4) For ends of lintels fully supported by walls, provide minimum bearing length of 38 mm for lintel spans up to 3 m, or minimum bearing length of 76 mm for lintel spans greater than 3 m.
- (5) Spans for 0.6 m tributary width are calculated for lintels in end walls that support only a 0.6 m width of roof and ceiling, but do not support roof joists, roof rafters or roof trusses.
- (6) Lintel spans are calculated based on a maximum floor joist, roof joist or rafter span of 4.9 m and a maximum roof truss span of 9.8 m. Lintel spans may be increased by 5% if rafter and joist spans are not more than 4.3 m and roof truss spans are not more than 8.6 m. Spans may be increased by 10% if rafter and joist spans are not more than 3.7 m and roof trusses are not more than 7.4 m.
- (7) Spans apply only where the floors serve residential areas as described in Table 4.1.5.3., or the uniformly distributed *live load* does not exceed that specified for residential areas as described in Table 4.1.5.3.



Table A-15  
Maximum Spans for Spruce – Pine – Fir Lintels – No. 1 or No. 2 Grade – Non-Structural Sheathing<sup>(1)</sup>  
Forming Part of Sentences 9.23.12.3.(1) and (3) and 9.37.3.1.(1)

Lintel Supporting	Lintel Size, mm <sup>(2)</sup>	Maximum Span, m <sup>(3)(4)</sup>						Interior Walls
		Exterior Walls						
		Specified Snow Load, kPa						
		1.0	1.5	2.0	2.5	3.0		
Limited attic storage and ceiling	2 – 38 × 89	This Area Intentionally Left Blank					1.27	
	2 – 38 × 140						1.93	
	2 – 38 × 184						2.35	
	2 – 38 × 235						2.88	
	2 – 38 × 286						3.34	
Roof and ceiling only (tributary width of 0.6 m maximum) <sup>(5)</sup>	2 – 38 × 89	2.55	2.23	2.02	1.88	1.77	1.88	
	2 – 38 × 140	4.01	3.50	3.18	2.96	2.78	2.96	
	2 – 38 × 184	5.27	4.61	4.18	3.88	3.66	3.88	
	2 – 38 × 235	6.37	5.76	5.34	4.96	4.67	4.96	
	2 – 38 × 286	7.38	6.67	6.21	5.87	5.61	5.87	
Roof and ceiling only (tributary width of 4.9 m maximum) <sup>(6)</sup>	2 – 38 × 89	1.27	1.11	1.01	0.93	0.87	0.93	
	2 – 38 × 140	1.93	1.66	1.48	1.35	1.25	1.35	
	2 – 38 × 184	2.35	2.02	1.80	1.64	1.52	1.64	
	2 – 38 × 235	2.88	2.47	2.20	2.01	1.84	2.01	
	2 – 38 × 286	3.34	2.87	2.56	2.33	2.09	2.33	
Roof, ceiling and 1 storey <sup>(3)(6)(7)</sup>	2 – 38 × 89	1.05	0.96	0.89	0.84	0.79	0.74	
	2 – 38 × 140	1.49	1.37	1.27	1.19	1.13	1.02	
	2 – 38 × 184	1.82	1.67	1.55	1.44	1.33	1.20	
	2 – 38 × 235	2.22	2.04	1.89	1.73	1.59	1.45	
	2 – 38 × 286	2.58	2.36	2.15	1.96	1.81	1.66	
Roof, ceiling and 2 storeys <sup>(3)(6)(7)</sup>	2 – 38 × 89	0.94	0.88	0.83	0.79	0.76	0.64	
	2 – 38 × 140	1.34	1.26	1.19	1.13	1.06	0.88	
	2 – 38 × 184	1.63	1.53	1.44	1.33	1.25	1.05	
	2 – 38 × 235	1.99	1.87	1.72	1.60	1.50	1.27	
	2 – 38 × 286	2.31	2.12	1.96	1.82	1.71	1.45	
Roof, ceiling and 3 storeys <sup>(3)(6)(7)</sup>	2 – 38 × 89	0.88	0.83	0.80	0.77	0.74	0.59	
	2 – 38 × 140	1.25	1.19	1.14	1.08	1.02	0.81	
	2 – 38 × 184	1.52	1.44	1.35	1.27	1.21	0.97	
	2 – 38 × 235	1.86	1.73	1.62	1.53	1.45	1.17	
	2 – 38 × 286	2.11	1.96	1.84	1.74	1.66	1.35	
Column 1	2	3	4	5	6	7	8	

**Notes to Table A-15:**

- r<sub>s</sub> (1) Where structural sheathing is used, lintel spans may be increased by 15%. Structural sheathing consists of a minimum 9.5 mm thick structural panel conforming to CSA O121, CSA O151, CSA O325 or CSA O437.0 fastened with at least two rows of fasteners to the exterior face of the lintel, and a single row to the top plates and studs. Fasteners shall conform to Table 9.23.3.5.
- (2) A single piece of 89 mm thick lumber may be used in lieu of 2 pieces of 38 mm thick lumber on edge.
- (3) If floor joists span the full width of the *building* without support, lintel spans shall be reduced by 15% for “Roof, ceiling and 1 storey”, by 20% for “Roof, ceiling and 2 storeys”, and by 25% for “Roof, ceiling and 3 storeys”.
- (4) For ends of lintels fully supported by walls, provide minimum bearing length of 38 mm for lintel spans up to 3 m, or minimum bearing length of 76 mm for lintel spans greater than 3 m.
- (5) Spans for 0.6 m tributary width are calculated for lintels in end walls that support only a 0.6 m width of roof and ceiling, but do not support roof joists, roof rafters or roof trusses.
- (6) Lintel spans are calculated based on a maximum floor joist, roof joist or rafter span of 4.9 m and a maximum roof truss span of 9.8 m. Lintel spans may be increased by 5% if rafter and joist spans are not more than 4.3 m and roof truss spans are not more than 8.6 m. Spans may be increased by 10% if rafter and joist spans are not more than 3.7 m and roof trusses are not more than 7.4 m.
- (7) Spans apply only where the floors serve residential areas as described in Table 4.1.5.3., or the uniformly distributed *live load* does not exceed that specified for residential areas as described in Table 4.1.5.3.

Table A-16  
Maximum Spans for Glued-Laminated Timber Lintels – 20f-E Stress Grade – Exterior Walls – Roof and Ceiling Load Only  
Forming Part of Sentences 9.23.12.3.(1) and (3) and 9.37.3.1.(1)

Lintel Size, mm	Maximum Span, m <sup>(1)(2)(3)</sup>														
	Specified Snow Load, kPa														
	1.0			1.5			2.0			2.5			3.0		
	Supported Length, m <sup>(4)(5)</sup>			Supported Length, m <sup>(4)(5)</sup>			Supported Length, m <sup>(4)(5)</sup>			Supported Length, m <sup>(4)(5)</sup>			Supported Length, m <sup>(4)(5)</sup>		
	2.4	3.6	4.8	2.4	3.6	4.8	2.4	3.6	4.8	2.4	3.6	4.8	2.4	3.6	4.8
130 × 304	6.23	5.63	5.24	5.63	5.09	4.73	5.24	4.73	4.40	4.95	4.48	4.17	4.73	4.28	3.87
80 × 380	6.52	5.89	5.48	5.89	5.32	4.96	5.48	4.96	4.52	5.19	4.69	4.11	4.96	4.39	3.80
130 × 342	6.80	6.15	5.72	6.15	5.56	5.17	5.72	5.17	4.81	5.41	4.89	4.55	5.17	4.67	4.35
80 × 418	7.00	6.33	5.89	6.33	5.72	5.32	5.89	5.32	4.96	5.57	5.03	4.52	5.32	4.81	4.18
130 × 380	7.36	6.65	6.19	6.65	6.01	5.59	6.19	5.59	5.21	5.86	5.29	4.92	5.59	5.06	4.70
80 × 456	7.48	6.76	6.29	6.76	6.10	5.68	6.29	5.68	5.29	5.95	5.37	4.93	5.68	5.13	4.56
130 × 418	7.91	7.15	6.65	7.15	6.46	6.01	6.65	6.01	5.59	6.29	5.68	5.29	6.01	5.43	5.05
80 × 494	7.94	7.17	6.68	7.17	6.48	6.03	6.68	6.03	5.61	6.31	5.71	5.31	6.03	5.45	4.94
80 × 532	8.39	7.58	7.06	7.58	6.85	6.38	7.06	6.38	5.93	6.67	6.03	5.61	6.38	5.76	5.32
130 × 456	8.44	7.63	7.10	7.63	6.89	6.41	7.10	6.41	5.97	6.71	6.07	5.65	6.41	5.80	5.39
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

## Notes to Table A-16:

- (1) Spans are valid for glued-laminated timber conforming to CAN/CSA-O122 and CSA O177.
- (2) Provide a minimum bearing length of 89 mm. (Alternatively, the bearing length may be calculated in accordance with Part 4.)
- (3) Top edge of lintel assumed to be fully laterally supported.
- (4) Supported length means half the length of trusses or rafters, plus the length of overhang beyond the wall.
- (5) For intermediate supported lengths, straight interpolation may be used.

**R<sub>5</sub>**

**Table A-25**  
**Maximum Spans for Steel Beams Supporting a Roof and One Floor in Dwelling Units**  
**Where Beams Support Interior Stud Walls or Exterior Stud Walls With Siding – 2.0 kPa Specified Roof Design Snow Load**  
**Forming Part of Sentence 9.23.4.3.(1)**

		Maximum Span, m							
Roof <i>Live Load</i> , kPa		2.0							
Supported Roof Length, m <sup>(1)</sup>		2.4		3.6		4.8		6.0	
Supported Floor Length, m <sup>(2)</sup>		2.4	3.6	2.4	3.6	2.4	3.6	2.4	3.6
<b>Steel Beam Section</b>	W 150 × 22	3.81	3.54	3.53	3.33	3.32	3.13	3.15	2.94
	W 150 × 30	4.28	3.98	3.97	3.74	3.73	3.55	3.54	3.39
	W 150 × 37	4.66	4.33	4.32	4.07	4.06	3.86	3.85	3.69
	W 200 × 27	4.90	4.56	4.54	4.28	4.27	4.06	4.05	3.88
	W 200 × 31	5.23	4.86	4.85	4.57	4.56	4.34	4.32	4.14
	W 200 × 36	5.38	5.00	4.98	4.70	4.68	4.46	4.45	4.26
	W 200 × 42	5.70	5.30	5.28	4.98	4.96	4.72	4.71	4.51
	W 250 × 33	6.06	5.64	5.62	5.30	5.28	5.03	5.01	4.80
	W 250 × 39	6.49	6.04	6.02	5.67	5.66	5.38	5.37	5.14
	W 250 × 49	6.85	6.37	6.35	5.99	5.97	5.68	5.67	5.43
	W 310 × 39	7.29	6.78	6.76	6.37	6.35	6.04	6.03	5.77
	W 310 × 45	7.68	7.14	7.11	6.71	6.69	6.36	6.35	6.08
	Column 1	2	3	4	5	6	7	8	9

**Notes to Table A-25:**

- (1) Supported roof length means half the sum of the roof framing spans on both sides of the beam.
- (2) Supported floor length means half the sum of the floor framing spans on both sides of the beam.

Table A-26  
 Maximum Spans for Steel Beams Supporting a Roof and One Floor in Dwelling Units  
 Where Beams Support Exterior Stud Walls With Brick Veneer – 2.5 kPa Specified Roof Design Snow Load  
 Forming Part of Sentence 9.23.4.3.(1)

		Maximum Span, m							
Roof Live Load, kPa		2.5							
Supported Roof Length, m <sup>(1)</sup>		2.4		3.6		4.8		6.0	
Supported Floor Length, m <sup>(2)</sup>		2.4	3.6	2.4	3.6	2.4	3.6	2.4	3.6
Steel Beam Section	W 150 × 22	2.71	2.59	2.55	2.46	2.43	2.35	2.33	2.26
	W 150 × 30	3.04	2.91	2.87	2.76	2.73	2.64	2.62	2.54
	W 150 × 37	3.32	3.17	3.13	3.01	2.97	2.88	2.85	2.77
	W 200 × 27	3.49	3.33	3.29	3.16	3.13	3.02	2.99	2.91
	W 200 × 31	3.72	3.56	3.51	3.38	3.34	3.23	3.20	3.10
	W 200 × 36	3.82	3.65	3.61	3.47	3.43	3.32	3.29	3.19
	W 200 × 42	4.05	3.87	3.82	3.68	3.64	3.52	3.48	3.38
	W 250 × 33	4.31	4.12	4.07	3.91	3.87	3.74	3.71	3.60
	W 250 × 39	4.62	4.41	4.36	4.19	4.15	4.01	3.97	3.85
	W 250 × 49	4.87	4.66	4.60	4.42	4.37	4.23	4.19	4.07
	W 310 × 39	5.19	4.96	4.89	4.71	4.65	4.50	4.46	4.33
	W 310 × 45	5.46	5.22	5.15	4.95	4.90	4.74	4.69	4.55
	W 310 × 52	5.80	5.54	5.47	5.26	5.21	5.03	4.98	4.84
	W 310 × 60	5.96	5.69	5.62	5.41	5.35	5.17	5.12	4.97
	W 360 × 33	5.14	4.91	4.85	4.66	4.61	4.46	4.42	4.29
	W 360 × 39	5.51	5.27	5.20	5.00	4.94	4.78	4.73	4.60
	W 360 × 45	5.85	5.59	5.52	5.31	5.25	5.08	5.03	4.88
	W 360 × 51	6.14	5.87	5.79	5.57	5.51	5.33	5.27	5.12
	W 360 × 57	6.42	6.13	6.05	5.82	5.76	5.57	5.51	5.35
	Column 1	2	3	4	5	6	7	8	9

## Notes to Table A-26:

- (1) Supported roof length means half the sum of the roof framing spans on both sides of the beam.  
 (2) Supported floor length means half the sum of the floor framing spans on both sides of the beam.

Table 10.3.2.2.A.  
For Evaluation of Early Warning/Evacuation  
Forming Part of Sentence 10.3.2.2.(3)

Early Warning / Evacuation Evaluation	<i>Compliance Alternative</i> <sup>(1)</sup>
Early Warning and Evacuation to be checked against (a) <i>access to exit</i> widths based on <i>occupant load</i> in Subsection 3.3.1. or 9.9.3.; (b) <i>exit</i> widths based on <i>occupant load</i> in Subsection 3.4.3. or 9.9.3.; (c) <i>exit</i> signs in Subsection 3.4.5. or 9.9.11.; (d) lighting of <i>exits</i> , lighting of <i>access to exits</i> and emergency lighting in Subsection 3.2.7. or 9.9.12.; (e) fire alarm system in Subsection 3.2.4. or 9.10.18.; (f) <i>smoke alarms</i> in Subsection 9.10.19.; (g) travel distance and number of <i>exits</i> in other Parts of this Division; (h) smoke control measures, and at least one elevator to permit transport of firefighters to all floors in <i>hotels</i> whose floor level is more than 18 m high, measured between <i>grade</i> and floor level of the top <i>storey</i> as per Subsection 3.2.6.; and (i) door release hardware requirements in Articles 3.3.1.12. and 3.4.6.16., and deficiencies shall be upgraded.	EARLY WARNING (a) <i>Compliance alternatives</i> as listed may be used.  EVACUATION (b) <i>Compliance alternatives</i> as listed to <i>access to exit</i> and <i>exit</i> widths, number of <i>exits</i> , door release hardware, and travel distance may be used.
Column 1	2

**Notes to Table 10.3.2.2.A.:**

(1) See Tables 11.5.1.1.A., 11.5.1.1.B., 11.5.1.1.C., 11.5.1.1.D/E. and 11.5.1.1.F. for *compliance alternatives* that may be used.

- r<sub>5</sub>** (7) Except as provided in Sentence (8), the *performance level* of a *building* or part of a *building* is reduced in an existing *building* of *combustible construction* where,
- (a) the *occupancy* is changed to a *residential occupancy* in all or part of the *building*, and
  - (b) if the *building* was new, it would have been required to be of *noncombustible construction* or to be constructed in accordance with Article 3.2.2.43A. or 3.2.2.50A.
- (8) A change in the *occupancy* of a *building* or part of a *building* to a *residential occupancy* does not reduce the *performance level* of the *building* or part of the *building* where,
- (a) the *building* is *sprinklered*, and
  - (b) the *building* does not exceed 6 *storeys* in *building height*.
- (9) The *performance level* of a *building* or part of a *building* is reduced where the new *major occupancy* in an existing *building* of multiple *occupancy* is not separated from adjoining *major occupancies* by *fire separations* having *fire-resistance ratings* conforming to Article 3.1.3.1., Subsection 9.10.9. or Table 10.3.2.2.B.
- (10) The *performance level* of a *building* is reduced where the *building* after the change of *major occupancy* will not comply with Article 3.1.3.2. or 9.10.9.12.
- (11) The *performance level* of a *building* or part of a *building* is reduced where, after a change of *major occupancy*,
- (a) the total daily design *sanitary sewage* flow of the new *major occupancy*, calculated in accordance with Article 8.2.1.3., exceeds the capacity of any component of a *sewage system* serving the *building*, or
  - (b) the type or amount of *sanitary sewage* that will, under the new *major occupancy*, be discharged to a *sewage system* serving the *building* is prohibited by Article 8.1.3.1.

Table 10.3.2.2.B.<sup>(1)</sup>  
 Additional Upgrading for Multiple Major Occupancies  
 Forming Part of Sentence 10.3.2.2.(9)

New Major Occupancy	Code Requirements	Compliance Alternative	
		For Existing Building Reduce to	If Sprinklered Reduce to
All	Table 3.1.3.1. and Subsection 9.10.9. Where:		
	1 h rating required	45 min	30 min
	2 h rating required	1.5 h	1 h
	3 h rating required	2 h	1.5 h
Column 1	2	3	4

Notes to Table 10.3.2.2.B.:

(1) For *buildings* with multiple *major occupancies* only, where there is a change in *major occupancy*.

- r<sub>1</sub>** (12) The *performance level* of an existing *building* or part of an existing *building* is reduced where,
- (a) the use of the *building* or part of the *building* is changed to a retirement home regulated under the *Retirement Homes Act, 2010*, and
  - (b) any of the following applies:
    - (i) the retirement home is not *sprinklered*,
    - (ii) Clause 3.2.6.8.(1)(b) or (c), as applicable, requires that a voice communication system conforming to Article 3.2.4.23. be provided in the *building* and such a system is not provided in the *building*, or
    - (iii) the retirement home contains one or more doors to *suites* or sleeping rooms not within *suites*, other than doors leading directly to the exterior, that are not equipped with self-closing devices.

## Section 10.4. Compliance Alternatives

### 10.4.1. Compliance Alternatives

#### 10.4.1.1. Substitution

(1) Except as provided in Sentence (3), a *compliance alternative* to a requirement contained in Part 3, 4, 6 or 8 that is shown in Tables 11.5.1.1.A., 11.5.1.1.B., 11.5.1.1.C., 11.5.1.1.D/E. or 11.5.1.1.F. may be substituted for the requirement where the *chief building official* is satisfied that compliance with the requirement is impracticable because,

- (a) of structural or *construction* difficulties, or
- (b) it is detrimental to the preservation of a *heritage building*.

(2) Except as provided in Sentence (3), a *compliance alternative* to a requirement contained in Part 9 or 12 shown in Tables 11.5.1.1.C., 11.5.1.1.D/E. or 11.5.1.1.F. may be substituted for the requirement without satisfying the *chief building official* that the requirement is impracticable.

(3) Where the *building* has been in existence for less than five years, *compliance alternatives* may only be used in respect of requirements of this Division that are referenced in Sentences 10.3.2.2.(3), (5) and Table 10.3.2.2.B.

¶1 (2) *Construction* in respect of a *hotel*, a Group B, Division 3 *occupancy* or a retirement home regulated under the *Retirement Homes Act, 2010* that is a Group C *occupancy* may be carried out in accordance with Sentence (1) only if the *construction* will be in conformance with the Fire Code made under the *Fire Protection and Prevention Act, 1997*.

¶4 **11.3.3.2. Extensive Renovation** (See Appendix A.)

(1) Where existing interior walls or ceilings or floor assemblies or roof assemblies are substantially removed in an existing *building* and new interior walls, ceilings, floor assemblies or roof assemblies are installed in the *building*, structural and fire-resistance elements shall be constructed in compliance with the requirements of the other Parts.

(2) Except as provided in Section 11.5., the proposed *construction* within an existing *suite* shall comply with the requirements of Section 3.8. where,

- (a) new interior walls or floor assemblies are installed,
- (b) the *suite* has an area greater than 300 m<sup>2</sup>, and
- (c) the *suite* is located in,

- (i) a *floor area* where the existing difference in elevation between the adjacent ground level and the floor level is not more than 200 mm, or
- (ii) a normally occupied *floor area* which is accessible by a passenger type elevator or other platform equipped passenger elevating device from an entrance *storey* where the existing difference in elevation between the adjacent ground level and the entrance *storey* level is not more than 200 mm.

¶5 (3) Except as provided in Section 11.5., the proposed *construction* within an existing *suite*, other than a *suite* described in Sentence (2) or a *suite* in a *building* described in Clause 3.8.1.1.(1)(a), (b), (c) or (d), shall comply with the requirements of Sentences 3.8.1.3.(6), 3.8.2.3.(6), 3.8.3.1.(6), 3.8.3.3.(19), 3.8.3.7.(1), 3.8.3.15.(5) and 3.8.3.16.(4) where new interior walls or floor assemblies are installed. (See Appendix A.)

(4) Except as provided in Sentence (5), where existing interior walls or ceilings or floor assemblies or roof assemblies are substantially removed on any *storey* in an existing *building* and new interior walls, ceilings, floor assemblies or roof assemblies are installed, the *storey* shall be *sprinklered* if,

- (a) the *storey* will contain a Group C *major occupancy*, and
- (b) the *building* is over 3 *storeys* in *building height*.

(5) Sentence (4) does not apply where the *building*,

- (a) conforms to Subclause 3.2.2.44.(1)(a)(ii), and
- (b) contains *dwelling units* having *means of egress* conforming to Sentence 3.3.4.4.(8).

(6) Where existing interior walls or ceilings or floor assemblies or roof assemblies are substantially removed and new interior walls, ceilings, floor assemblies or roof assemblies are installed in an existing *building* or part of an existing *building* that is a retirement home regulated under the *Retirement Homes Act, 2010*, the following requirements apply:

- (a) the retirement home shall be *sprinklered*,
- (b) a voice communication system conforming to Article 3.2.4.23. shall be provided in the *building*, if Clause 3.2.6.8.(1)(b) or (c), as applicable, requires that such a voice communication system be provided in the *building*, and
- (c) doors to *suites* and sleeping rooms not within *suites* in the retirement home, other than doors leading directly to the exterior, shall be equipped with self-closing devices.

## 11.3.4. Plumbing

### 11.3.4.1. Extension, Material Alteration or Repair

(1) Despite Subsections 11.3.1. to 11.3.3., when an existing *building* is extended or subject to material alteration or repair, Part 7 applies,

- (a) to the design and *construction* of *plumbing* in the extensions and those parts of the *building* subject to material alteration and repair, and
- (b) to *plumbing* which is adversely affected by the extension, alteration or repair.

## 11.3.5. Sewage Systems

### 11.3.5.1. Existing Septic Tanks

(1) Despite Subsections 11.3.1. to 11.3.3., where an existing *septic tank* is subject to material alteration, repair or replacement, the *construction* of the *septic tank* shall comply with Part 8.

### r<sub>3</sub> 11.3.5.2. Vertical Separations and Existing Sewage Systems

(1) Despite Subsections 11.3.1. to 11.3.3., where an existing *sewage system* is extended or is subject to material alteration or repair, the requirements respecting the vertical separation to the water table set out in Part 8 apply to the extended, altered or repaired portions of the *sewage system* as well as to the existing portions of the *sewage system*.

## Section 11.4. Performance Level Evaluation and Compensating Construction

### 11.4.1. General

#### 11.4.1.1. Performance Level

(1) The *performance level* of a *building* after *construction* shall not be less than the *performance level* of the *building* prior to *construction*.

(2) For the purposes of Sentence (1), reduction of *performance level* shall be determined in accordance with Subsection 11.4.2.

(3) Where the proposed *construction* would reduce the *performance level* of an existing *building*, compensating *construction* shall be required in conformance with Subsection 11.4.3.

### 11.4.2. Reduction in Performance Level

#### 11.4.2.1. Structural

(1) The *performance level* of an existing *building* is reduced where after proposed *construction* in all or part of an existing *building*,

- (a) the *major occupancy* will change to a different *major occupancy*,
- (b) the *occupant load* will increase by more than 15%, or
- (c) the *live load* will increase due to change in use within the same *major occupancy*,

and the existing structural floor and roof framing systems and their supporting members after the *construction* are not adequate to support the proposed *dead loads* and *live loads*.

#### 11.4.2.2. Increase in Occupant Load

(1) Except as provided in Sentences 11.4.2.5.(2) and (3), the *performance level* of an existing *building* is reduced where proposed *construction* will increase the *occupant load* of an existing *building* by more than 15%.

(2) The *performance level* of an existing *building* is reduced where proposed *construction* will increase the *occupant load* by 15% or less and the new *occupant load* will be more than 15% above the *occupant load* for which a fire alarm system is required under Sentence 3.2.4.1.(2).



(3) The *performance level* of an existing *building* is reduced where proposed *construction* will increase the *occupant load* by 15% or less and the new *occupant load* will be more than 15% above the existing *exit capacity* as required under Article 3.4.3.2.

### 11.4.2.3. Change of Major Occupancy

- r<sub>1</sub> (1) Except as provided in Sentence 11.4.2.5.(4), the *performance level* of an existing *building* is reduced where proposed *construction* will result in,
- (a) the change of the *major occupancy* of all or part of an existing *building* to another *major occupancy* of a greater *hazard index*,
  - (b) the conversion of a *suite* of a Group C *major occupancy* into more than one *suite* of Group C *major occupancy*,
  - (c) the conversion of a *suite* or part of a *suite* of a Group A, Division 2 or a Group A, Division 4 *major occupancy* into a *gaming premises*,
  - (d) the change of a *farm building* or part of a *farm building* to a *major occupancy*,
  - (e) the change of a *building* or part of a *building* to a *post-disaster building*,
  - (f) the change of a *building* or part of a *building* to a retirement home regulated under the *Retirement Homes Act, 2010*, or
  - (g) the change in use of a *building* or part of a *building* where the previous *major occupancy* of the *building* or part of the *building* cannot be determined.
- r<sub>1</sub> (2) For the purpose of this Article and Sentences 11.4.2.1.(1) and 11.4.2.5.(4), the change of use set out in Clauses (1)(b) to (g) is also deemed to constitute a change in *major occupancy*.
- (3) The *performance level* of an existing *building* is reduced where the early warning and evacuation systems requirements of other Parts for the proposed *major occupancy* exceed those of the existing *building*.
- (4) The *performance level* of an existing *building* is reduced where the proposed *major occupancy* in the *building* is not separated from the adjoining *major occupancies* by *fire separations* having *fire-resistance ratings* conforming to Tables 3.1.3.1. and 11.4.3.4.B.
- r<sub>5</sub> (5) The *performance level* of an existing *building* is reduced where the *occupancy* of all or part of an existing *building* of *combustible construction* is changed to a new *major occupancy* that would require the *building*, if it were a new *building*, to be of *noncombustible construction* or to be constructed in accordance with Article 3.2.2.43A. or 3.2.2.50A.
- (6) Despite Clause (1)(a), the *performance level* of an existing *building* is reduced where proposed *construction* will result in the change of the *major occupancy* of all or part of an existing *building* to a Group C *major occupancy* in a *building* over 3 *storeys* in *building height*, except in a *building* conforming to Subclause 3.2.2.44.(1)(a)(ii) and having an egress facility conforming to Sentence 3.3.4.4.(8).

### 11.4.2.4. Plumbing

(1) The *performance level* of an existing *building* is reduced where the existing *building* is extended or subject to material alteration or repair, and *plumbing* in the existing *building* is adversely affected by the extension, alteration or repair.

### 11.4.2.5. Sewage Systems

(1) The *performance level* of an existing *building* is reduced where the existing *building* is extended or subject to material alteration or repair and a *sewage system* serving the existing *building* is adversely affected by the extension, alteration or repair of the existing *building*.

(2) Except as provided in Sentence (3), the *performance level* of an existing *building* is reduced where proposed *construction* will increase the *occupant load* of an existing *building*, and the new *occupant load* will result in the total daily design *sanitary sewage* flow of the *building*, calculated in accordance with Article 8.2.1.3., exceeding the capacity of any component of a *sewage system* serving the *building*.

- (3) The *performance level* of an existing *dwelling unit* is reduced where *proposed construction* that,
- (a) increases the number of bedrooms in the *dwelling unit*,
  - (b) exceeds 15% of the finished area of the *dwelling unit*, or
  - (c) adds new *plumbing fixtures* to the *dwelling unit*,

will result in the total daily design *sanitary sewage* flow of the *dwelling unit*, calculated in accordance with Article 8.2.1.3., exceeding the capacity of any component of a *sewage system* serving the *dwelling unit*.

- (4) The *performance level* of an existing *building* is reduced where *proposed construction* will result in the change of a *major occupancy* of all or part of the existing *building* to another *major occupancy* and,
- (a) the total daily design *sanitary sewage* flow of the proposed *major occupancy*, calculated in accordance with Article 8.2.1.3., exceeds the capacity of any component of a *sewage system* serving the *building*, or
  - (b) the type or amount of *sanitary sewage* which will, under the proposed *major occupancy*, be discharged to a *sewage system* serving the *building*, is prohibited by Article 8.1.3.1.

#### r<sub>5</sub> 11.4.2.6. Extension of Buildings of Combustible Construction

- (1) The *performance level* of an existing *building of combustible construction* is reduced where the existing *building* is extended by adding a *storey* or *storeys* such that the extended *building* will be more than four *storeys* in *building height*.

### 11.4.3. Compensating Construction

#### 11.4.3.1. General (See Appendix A.)

- (1) Where the *performance level* of an existing *building* is reduced under Subsection 11.4.2., *compensating construction* shall be carried out in accordance with this Subsection.
- (2) Except as provided in Sentence (3), *compensating construction* required under this Subsection applies to the part of the *building* being altered and shall include,
- (a) *fire separations*, with the required *fire-resistance ratings*, separating the part being altered from the *floor areas* immediately above and below and from the immediate adjacent areas, and
  - (b) *access to exits* and *exits* from the *building*, where the alteration adversely affects the *exit* system of the *building*.
- (3) *Compensating construction* required under this Subsection applies to the existing *building systems* that are adversely affected by the proposed *construction*.

#### 11.4.3.2. Structural

- (1) Where the *performance level* of an existing *building* is reduced under Sentence 11.4.2.1.(1),
- (a) remedial measures shall be taken to support the proposed loads, or
  - (b) the portion of the floor affected by the proposed loads shall be restricted to the loading it will support and signs stating the restrictions shall be posted.
- (See Appendix A.)

#### 11.4.3.3. Increase in Occupant Load (See Appendix A.)

- (1) Where the *performance level* of an existing *building* is reduced under Sentence 11.4.2.2.(1), (2) or (3), the *building* shall be evaluated, and the early warning and evacuation systems shall be upgraded, in conformance with the applicable requirements of Table 11.4.3.3.
- (2) Sentence (1) does not apply in a Group C *occupancy* where the new total *occupant load* is,
- (a) 14 persons or fewer in a *boarding, lodging or rooming house*, except that where the *occupant load* is between 10 and 15 persons, an interconnected system of *smoke alarms* in corridors near stairways is required, or

(b) 16 persons or fewer in a *building* containing residential *suites* which are *dwelling units*, except that where the *occupant load* is between 10 and 17 persons, an interconnected system of *smoke alarms* in corridors near stairways is required.

(3) Where the *performance level* of an existing *building* is reduced under Sentence 11.4.2.2.(1), additional *construction* shall be required in order that the *building* or part of the *building* subject to the increase in *occupant load* conforms to the requirements of Sentence 6.2.2.1.(2), Subsection 3.7.4. and Article 9.31.1.1.

#### **11.4.3.4. Change in Major Occupancy** (See Appendix A.)

r<sub>1</sub> (1) Where the *performance level* of an existing *building* is reduced under Clause 11.4.2.3.(1)(a), (b), (c), (d), (e), or (g), additional upgrading shall be required in conformance with Table 11.4.3.4.A. and so that the *construction index* of the *building* is increased to at least equal the *hazard index* of the new *major occupancy* that the *building* is to support.

(2) A *building* or part of the *building* subject to a change of *major occupancy* shall conform to the requirements of Subsection 3.2.6., Sections 3.7., 3.11., 3.12., Sentences 6.2.2.1.(2), 6.2.3.9.(1) and 6.2.4.7.(10), Subsections 9.5.1. and 9.5.3. to 9.5.10., Section 9.7., Subsection 9.10.17., Sections 9.31. and 9.32., and Subsections 9.34.1. to 9.34.3. as they apply to the new *major occupancy* that the *building* or part of the *building* is to support.

(3) Where the *performance level* of an existing *building* is reduced under Sentence 11.4.2.3.(3), the *building* shall be evaluated, and the early warning and evacuation systems shall be upgraded, in conformance with the applicable requirements of Table 11.4.3.3.

(4) Where the *performance level* of an existing *building* is reduced under Sentence 11.4.2.3.(4), upgrading of the *fire separations* shall be required in conformance with the applicable requirements of Article 3.1.3.1. and Table 11.4.3.4.B.

r<sub>5</sub> (5) Where the *performance level* is reduced under Sentence 11.4.2.3.(5), the requirement for the *building* to be of *noncombustible construction* or to be constructed in accordance with Article 3.2.2.43A. or 3.2.2.50A. is satisfied if the *building* is *sprinklered*.

(6) Where the *performance level* is reduced under Sentence 11.4.2.3.(6), the *storey* subject to the change shall be *sprinklered*.

r<sub>1</sub> (7) Where the *performance level* of an existing *building* is reduced under Clause 11.4.2.3.(1)(f), the following requirements apply:

- (a) the retirement home shall be *sprinklered*,
- (b) a voice communication system conforming to Article 3.2.4.23. shall be provided in the *building*, if Clause 3.2.6.8.(1)(b) or (c), as applicable, requires that such a voice communication system be provided in the *building*, and
- (c) doors to *suites* and sleeping rooms not within *suites* in the retirement home, other than doors leading directly to the exterior, shall be equipped with self-closing devices.

#### **11.4.3.5. Plumbing**

(1) Where the *performance level* of an existing *building* is reduced under Sentence 11.4.2.4.(1), upgrading of *plumbing* in the existing *building* which is adversely affected by the extension, alteration or repair shall be required in conformance with Part 7.

#### **11.4.3.6. Sewage Systems**

(1) Where the *performance level* of an existing *building* is reduced under Article 11.4.2.5., upgrading of a *sewage system* which is adversely affected by the *construction*, increase in *occupant load*, increase in the total daily design *sanitary sewage* flow or change in amount or type of *sanitary sewage* shall be required in conformance with Part 8.

#### **r<sub>5</sub> 11.4.3.7. Extension of Buildings of Combustible Construction**

(1) Where the *performance level* of an existing *building* is reduced under Article 11.4.2.6., the *building* shall be *sprinklered*.

## Section 11.5. Compliance Alternatives

### 11.5.1. Compliance Alternatives (See Appendix A.)

#### 11.5.1.1. Compliance Alternatives

(1) A *compliance alternative* shown in Table 11.5.1.1.A., 11.5.1.1.B., 11.5.1.1.C., 11.5.1.1.D/E. or 11.5.1.1.F. may be substituted for a requirement contained in Part 3, 4, 6 or 8 where the *chief building official* is satisfied that compliance with the requirement is impracticable because,

- (a) of structural or *construction* difficulties, or
- (b) it is detrimental to the preservation of a *heritage building*.

(2) A *compliance alternative* shown in Table 11.5.1.1.A., 11.5.1.1.B., 11.5.1.1.C., 11.5.1.1.D/E. or 11.5.1.1.F. may be substituted for a requirement contained in Part 9 or 12 without satisfying the *chief building official* that compliance with the requirement is impracticable.

Table 11.2.1.1.A.  
Construction Index  
Forming Part of Sentence 11.2.1.1.(1)

Fire-Resistance Rating			Type of Construction	C.I. <sup>(2)</sup>
Floors over Basement	Other Floors	Roof		
3 h	3 h	1.5 h	<i>Noncombustible</i>	8 <sup>(1)</sup>
2 h	2 h	1 h	<i>Noncombustible</i>	7
1 h	1 h	45 min	<i>Noncombustible</i>	6
45 min	45 min	0 h	<i>Noncombustible</i>	5
45 min	45 min	45 min	<i>Heavy Timber</i>	5
45 min	45 min	45 min	<i>Combustible</i>	5
45 min	0 h	0 h	<i>Noncombustible</i>	4
45 min	45 min	0 h	<i>Combustible</i>	4
30 min	0 h	0 h	<i>Noncombustible</i>	3
30 min	30 min	0 h	<i>Combustible</i>	3
0 h	30 min	0 h	<i>Combustible</i>	2
0 h	0 h	0 h	<i>Combustible</i>	1 <sup>(1)</sup>
Column 1	2	3	4	5

#### Notes to Table 11.2.1.1.A.:

- (1) C.I. of 1 is lowest fire protection *performance level* and C.I. of 8 is highest.
- (2) Take highest rating for C.I. from Table 11.2.1.1.A. for existing *building*.

Table 11.2.1.1.B.<sup>(1)(4)</sup>  
**Hazard Index**  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group A Division 1	Occupancy H.I. <sup>(5)</sup>		
	Small	Medium	Large
Dinner Theatres	4	5	6
Live Theatres	4	5	6
Motion Picture Theatres	4	5	6
Opera Houses	4	5	6
Television Studios (With Audience)	4	5	6
Column 1	2	3	4

**Notes to Table 11.2.1.1.B.:**

r <sub>5</sub> (1)	<i>Building Size (Maximum)<sup>(2)(3)</sup></i>	
	<ul style="list-style-type: none"> <li>– 300 <i>occupant load</i> maximum / 1 <i>storey</i></li> <li>– 600 m<sup>2</sup> / 600 <i>occupant load</i> maximum / 1 <i>storey</i> with less than 40% 2 <i>storey</i><sup>(6)</sup></li> <li>– Any area / not exceeding 18 m high, measured between <i>grade</i> and the floor level of the top <i>storey</i></li> <li>– Over 18 m high, measured between <i>grade</i> and the floor level of the top <i>storey</i></li> </ul>	Small Medium Large H.I. = 7

- r<sub>5</sub> (2) Sizes are based on *building area* and *building height*, unless noted.
- (3) *Building* size is based on the existing *building* facing one *street*.
- (4) For existing *buildings* facing multiple *streets*, see Sentence 11.2.1.1.(2) and Table 11.4.3.4.A.
- (5) Take lowest rating for *H.I.* from Table for *major occupancy* change.
- (6) *Building* may have less than 40% of its area as 2 *storeys* for purposes as described in Clauses 3.2.2.21.(1)(b) and (c).

Table 11.2.1.1.C.(1)(4)(6)  
 Hazard Index  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group A Division 2	Occupancy H.I. <sup>(5)</sup>		
	Small	Medium	Large
Art Galleries	3	4	6
Auditoria	3	4	6
Billiard Halls, Amusement Arcades	3	4	6
Bowling Alleys	3	4	6
Churches	3	4	6
Clubs, Lodges (Non-Residential)	3	4	6
Community Halls	3	4	6
Concert Halls	3	4	6
Court Rooms	3	4	6
Dance Halls	3	4	6
Daycare Centres	3	4	6
Exhibition Halls (Without Sales)	3	4	6
Exhibition Halls (With Sales)	See Group E		
<i>Gaming premises</i>	3	4	6
Gymnasia (Multi-Purpose)	3	4	6
Gymnasia (Athletic)	3	4	6
Lecture Halls	3	4	6
Libraries	3	4	6
Licensed Beverage Establishments	3	4	6
Licensed Clubs, Lodges	3	4	6
Museums	3	4	6
Passenger Stations / Depots	3	4	6
<i>Public Heritage Buildings</i>	3	—	—
Recreational Piers	3	4	6
Restaurants	3	4	6
Schools, Colleges	3	4	6
Undertaking Premises	3	4	6
Column 1	2	3	4

Table 11.2.1.1.C.<sup>(1)(4)(6)</sup> (Cont'd)  
**Hazard Index**  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

**Notes to Table 11.2.1.1.C.:**

r <sub>s</sub> (1)	<i>Building Size (Maximum)<sup>(2)(3)</sup></i>	
	– 400 m <sup>2</sup> / 1 storey – 250 m <sup>2</sup> / 3 storey ( <i>Public Heritage Building</i> ) – 800 m <sup>2</sup> / 2 storey – Any area / not exceeding 18 m high, measured between <i>grade</i> and the floor level of the top storey – Over 18 m high, measured between <i>grade</i> and the floor level of the top storey	Small Small Medium Large <i>H.I. = 7</i>

- r<sub>s</sub> (2) Sizes are based on *building area* and *building height*, unless noted.  
 (3) *Building* size is based on the existing *building* facing one *street*.  
 (4) For existing *buildings* facing multiple *streets*, see Sentence 11.2.1.1.(2) and Table 11.4.3.4.A.  
 (5) Take lowest rating for *H.I.* from Table for *major occupancy* change.  
 (6) *Buildings* which exceed 3 storeys in *building height* and are of *combustible construction* shall be *sprinklered*.

Table 11.2.1.1.D.<sup>(1)(4)</sup>  
**Hazard Index**  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group A Division 3	<i>Occupancy H.I.<sup>(5)</sup></i>		
	Small	Medium	Large
Arenas (No Occupancy On Activity Surface)	3	4	6
Armouries (No Occupancy On Activity Surface)	3	4	6
Enclosed Stadia or Grandstand	3	4	6
Ice Rinks (No Occupancy On Activity Surface)	3	4	6
Indoor Swimming Pools	3	4	6
Column 1	2	3	4

**Notes to Table 11.2.1.1.D.:**

r <sub>s</sub> (1)	<i>Building Size (Maximum)<sup>(2)(3)</sup></i>	
	– 1 000 m <sup>2</sup> / 1 storey – 2 000 m <sup>2</sup> / 2 storey – Any area / not exceeding 18 m high, measured between <i>grade</i> and the floor level of the top storey – Over 18 m high, measured between <i>grade</i> and the floor level of the top storey	Small Medium Large <i>H.I. = 7</i>

- r<sub>s</sub> (2) Sizes are based on *building area* and *building height*, unless noted.  
 (3) *Building* size is based on the existing *building* facing one *street*.  
 (4) For existing *buildings* facing multiple *streets*, see Sentence 11.2.1.1.(2) and Table 11.4.3.4.A.  
 (5) Take lowest rating for *H.I.* from Table for *major occupancy* change.

R5

**Table 11.2.1.1.E.<sup>(1)(3)</sup>  
Hazard Index  
Forming Part of Sentences 11.2.1.1.(1) and (2)**

Group A Division 4	Occupancy H.I. <sup>(4)</sup>		
	Small	Medium	Large
Amusement Park Structures	2	3	5
Bleachers	1	3	5
Grandstands (Open)	1	3	5
Reviewing Stands	1	3	5
Stadia (Open)	1	3	5
Column 1	2	3	4

**R5 Notes to Table 11.2.1.1.E.:**

(1) <i>Building Size (Maximum)<sup>(2)</sup></i>	
– 2 500 <i>occupant load</i> max. / min. <i>limiting distance</i> of 6 m ( <i>combustible</i> )	Small
– 15 000 <i>occupant load</i> maximum (with roof at least ½ rating if <i>combustible</i> )	Medium
– Unlimited <i>occupant load</i>	Large

- (2) *Building* size is based on the existing *building* facing one *street*.
- (3) For existing *buildings* facing multiple *streets*, see Sentence 11.2.1.1.(2) and Table 11.4.3.4.A.
- (4) Take lowest rating for *H.I.* from Table for *major occupancy* change.

**Table 11.2.1.1.F.<sup>(1)</sup>  
Hazard Index  
Forming Part of Sentences 11.2.1.1.(1) and (2)**

Group B Division 1	Occupancy H.I. <sup>(3)(5)</sup>		
	Small	Medium	Large
Detention Facilities (Minimum Security) <sup>(4)</sup>	4	5	6
Detention Facilities (All Other Types of Security)	6	6	7
Police Station with Detention	3	—	—
Column 1	2	3	4



**Notes to Table 11.2.1.1.F.:**

- |                      |     |  |   |
|----------------------|-----|--|---|
| <b>r<sub>5</sub></b> | (1) | <i>Building Size (Maximum)<sup>(2)</sup></i><br>– Any area / 1 storey<br>– 600 m <sup>2</sup> / 1 storey (Police Station with Detention)<br>– Any area ( <i>noncombustible</i> ) / 2 storey<br>– Any area ( <i>noncombustible</i> ); 500 m <sup>2</sup> ( <i>combustible</i> ) / 2 storey<br>– Over 18 m high, measured between <i>grade</i> and the floor level of the top storey ( <i>noncombustible</i> )<br>– Over 500 m <sup>2</sup> ( <i>combustible</i> ) / over 2 storey | Small<br>Small<br>Medium<br>Large<br>H.I. = 7<br>H.I. = 7 |
|----------------------|-----|--|---|
- r<sub>5</sub>** (2) Sizes are based on *building area* and *building height*, unless noted.
- (3) When the size of a *building* falls into more than one category, the *H.I.* for the least restrictive is permitted to be used.
- r<sub>3</sub>** (4) Minimum security means occupants free to exit *building* in a fire emergency.
- (5) *Detention occupancy* with any *H.I.* shall be *sprinklered*.

**Table 11.2.1.1.G.<sup>(1)(4)</sup>**  
**Hazard Index**  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group B Division 2	Occupancy H.I. <sup>(5)(7)</sup>		
	Small	Medium	Large
Hospital, Long-Term Care Home (Immobile) <sup>(6)</sup>	4	5	7
Hospital, Long-Term Care Home (Non-Ambulatory) <sup>(6)</sup>	4	5	6
Hospital, Long-Term Care Home (Ambulatory) <sup>(6)</sup>	3	4	6
Psychiatric Facility (Maximum Confinement)	4	5	7
Psychiatric Facility (Minimum Confinement)	3	4	6
Police Station With Detention (as Permitted in Article 3.1.2.4.)	3	—	—
Column 1	2	3	4

**Notes to Table 11.2.1.1.G.:**

- |                      |     |   |   |
|----------------------|-----|---|---|
| <b>r<sub>5</sub></b> | (1) | <i>Building Size (Maximum)<sup>(2)(3)</sup></i><br>– 250 m <sup>2</sup> / 1 storey<br>– 600 m <sup>2</sup> / 1 storey (Police Station with Detention)<br>– 500 m <sup>2</sup> / 2 storey; 1 000 m <sup>2</sup> / 1 storey<br>– Any area ( <i>noncombustible</i> ); 500 m <sup>2</sup> ( <i>combustible</i> ) / 2 storey<br>– Any area / not exceeding 18 m high, measured between <i>grade</i> and the floor level of the top storey<br>– Over 18 m high, measured between <i>grade</i> and the floor level of the top storey | Small<br>Small<br>Medium<br>Medium<br>Large<br>H.I. = 7 |
|----------------------|-----|---|---|
- r<sub>5</sub>** (2) Sizes are based on *building area* and *building height*, unless noted.
- (3) *Building* size is based on the existing *building* facing one *street*.
- (4) For existing *buildings* facing multiple *streets*, see Sentence 11.2.1.1.(2) and Table 11.4.3.4.A.
- (5) When the size of a *building* falls into more than one category, the *H.I.* for the least restrictive is permitted to be used.
- r<sub>3</sub>** (6) Immobile means patients are attached to life support systems and cannot be moved. Non-Ambulatory means patients are confined to bed and require transportation. Ambulatory means patients may walk on their own.
- (7) *Care and treatment occupancy* with any *H.I.* shall be *sprinklered*.

Table 11.2.1.1.H.<sup>(1)</sup>  
 Hazard Index  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group B Division 3	Occupancy <i>H.I.</i> <sup>(4)(5)</sup>		
	Small	Medium	Large
Residential care facilities			
(Ambulatory) <sup>(6)</sup>	3	4	6
(Non-Ambulatory) <sup>(6)</sup>	4	5	6
Children Custodial Homes	3	4	6
Convalescent Homes			
(Ambulatory) <sup>(6)</sup>	3	4	6
(Non-Ambulatory) <sup>(6)</sup>	4	5	6
Group Homes For Adult Residents with Developmental Disabilities			
(Minimum Confinement)	3	4	6
(Maximum Confinement)	4	5	6
Column 1	2	3	4

**Notes to Table 11.2.1.1.H.:**

r <sub>5</sub> (1)	<i>Building Size (Maximum)</i> <sup>(2)(3)</sup>	
	– 600 m <sup>2</sup> / 1 storey – 500 m <sup>2</sup> / 2 storey; 1 000 m <sup>2</sup> / 1 storey – Any area / not exceeding 18 m high, measured between <i>grade</i> and the floor level of the top <i>storey</i> – Over 18 m high, measured between <i>grade</i> and the floor level of the top <i>storey</i>	Small Medium Large <i>H.I.</i> = 7

- r<sub>5</sub> (2) Sizes are based on *building area* and *building height*, unless noted.
- (3) *Building* size is based on the existing *building* facing one *street*.
- (4) When the size of a *building* falls into more than one category, the *H.I.* for the least restrictive is permitted to be used.
- (5) *Care occupancy* with any *H.I.* shall be *sprinklered*.
- r<sub>3</sub> (6) Non-Ambulatory means patients are confined to bed and require transportation. Ambulatory means patients may walk on their own.

Table 11.2.1.1.I.<sup>(1)</sup>  
 Hazard Index  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group C	Occupancy H.I. <sup>(4)</sup>		
	Small	Medium	Large
Apartments	3	4	6
Boarding Houses/Group Homes	3	—	—
Clubs, Residential	3	4	6
Colleges, Residential	3	4	6
Convents	3	4	6
Dormitories/Hostels	3	4	6
<i>Hotels</i>	3	5	6
Houses	2	2	—
Lodging Houses	3	—	—
<i>Live/work units</i>	4	5	7
Monasteries	3	4	6
<i>Public Heritage Buildings</i>	3	—	—
Rectories	2	—	—
Retirement Homes	3	4	6
Rooming Houses	3	—	—
Schools, Residential	3	4	6
Column 1	2	3	4

**Notes to Table 11.2.1.1.I.:**

r <sub>s</sub> (1)	<i>Building Size (Maximum)<sup>(2)(3)</sup></i>	
	<ul style="list-style-type: none"> <li>– 600 m<sup>2</sup> / 3 storey</li> <li>– 250 m<sup>2</sup> / 3 storey (<i>Public Heritage Building</i>)</li> <li>– 2 000 m<sup>2</sup> / not exceeding 6 storeys</li> <li>– Any area / not exceeding 36 m high, measured between <i>grade</i> and the floor level of the top storey</li> <li>– Over 36 m high, measured between <i>grade</i> and the floor level of the top storey</li> <li>– <i>Hotels</i> over 18 m high, measured between <i>grade</i> and the floor level of the top storey</li> </ul>	Small Small Medium Large H.I. = 7 H.I. = 7

- r<sub>s</sub> (2) Sizes are based on *building area* and *building height*, unless noted.  
 (3) *Buildings* which exceed 3 storeys in *building height* and are of *combustible construction* shall be *sprinklered*.  
 (4) Take lowest rating for *H.I.* from Table for *major occupancy change*.

F5

Table 11.2.1.1.J.(1)(4/6)  
**Hazard Index**  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group D	Occupancy H.I. <sup>(5)</sup>		
	Small	Medium	Large
Advertising and Sales Offices	3	3	5
Automatic Bank Deposit	3	4	5
Barber/Hairdresser Shops	3	4	5
Beauty Parlours	3	4	5
Branch Banks	3	4	5
Car Rental Premises	3	3	5
Chiropractic Offices	3	4	5
Communications Offices (Telecommunications)	3	4	5
Communications Offices (Courier)	3	3	5
Computer Centres	3	4	5
Construction Offices	3	3	5
Costume Rental Premises	3	4	5
Dental Offices (Denture Clinic)	3	4	5
Dental Offices (Surgical/Anaesthesia)	4	5	6
Dental Offices (General)	3	4	5
Dry Cleaning Depots	3	4	5
Dry Cleaning Premises (Self-Serve)	4	4	5
Health/Fitness Clubs	3	4	5
Laundries (Self-Serve)	4	4	5
Massage Parlours	3	4	5
Medical Offices (Examination)	3	4	5
Medical Offices (Surgical/Anaesthesia)	4	5	6
Offices (Business)	3	3	5
Offices (Charitable)	3	3	5
Offices (Legal/Accounting)	3	3	5
Offices/Studios (Design)	3	4	5
Column 1	2	3	4

**r5**

Table 11.2.1.1.J.<sup>(1)(4)(6)</sup> (Cont'd)  
 Hazard Index  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group D	<i>Occupancy H.I.<sup>(5)</sup></i>		
	Small	Medium	Large
Pharmacy Offices	3	4	5
Photographic Studios	3	4	5
Physiotherapy Offices	3	4	5
Police Stations (No Detention)	3	4	5
Printing and Duplicating	4	5	6
<i>Public Heritage Buildings</i>	3	—	—
Public Saunas	3	4	5
Radio Stations (No Audience)	3	4	5
Small Tool Rental Premises	3	4	5
Suntan Parlours	3	4	5
Veterinary Offices	3	4	5
Column 1	2	3	4

**Notes to Table 11.2.1.1.J.:**

<b>r5</b> (1)	<i>Building Size (Maximum)<sup>(2)(3)</sup></i>	
	– 800 m <sup>2</sup> / 2 storey – 250 m <sup>2</sup> / 3 storey ( <i>Public Heritage Building</i> ) – 1 600 m <sup>2</sup> / 3 storey – Any area / not exceeding 18 m high, measured between <i>grade</i> and the floor level of the top <i>storey</i> – Over 18 m high, measured between <i>grade</i> and the floor level of the top <i>storey</i> , but not exceeding 36 m high, measured between <i>grade</i> and the floor level of the top <i>storey</i> – Over 36 m high, measured between <i>grade</i> and the floor level of the top <i>storey</i>	Small Small Medium Large H.I. = 6 H.I. = 7

**r5** (2) Sizes are based on *building area* and *building height*, unless noted.

 (3) *Building* size is based on the existing *building* facing one *street*.

 (4) For existing *buildings* facing multiple *streets*, see Sentence 11.2.1.1.(2) and Table 11.4.3.4.A.

 (5) When the size of a *building* falls into more than one category, the *H.I.* for the least restrictive is permitted to be used.

**r5** (6) *Buildings* which exceed 3 *storeys* in *building height* and are of *combustible construction* shall be *sprinklered*.

Table 11.2.1.1.K.(1)(4)(6)  
 Hazard Index  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group E	Occupancy H.I. <sup>(5)</sup>		
	Small	Medium	Large
Automotive/Hardware Department Stores	4	5	7
China Shops	3	4	6
Department Stores	4	5	7
Electrical Stores (Fixtures)	3	3	5
Exhibition Halls (With Sales)	4	5	7
"Fast Food" Outlets	3	4	5
Feed and Seed Stores	4	5	7
Flea Markets	4	5	7
Flowers Shops	3	4	6
"Food" and Vegetable Markets	3	4	6
Garden Shops	3	4	6
"Gas" Bars	4	5	7
Gift Shops	3	4	6
Home Improvement Stores	4	5	7
Kitchen/Bathroom Cupboards Stores	3	4	6
Plumbing Stores (Fixtures/Accessories)	3	3	5
"Pop" Shops	3	4	6
<i>Public Heritage Buildings</i>	3	—	—
Rentals (See "Group D")	—	—	—
Restaurants (Not More Than 30 Persons as Permitted by Article 3.1.2.6.)	3	4	5
Shopping Malls	4	5	7
Stationery/Office Supply Stores	3	4	6
Stores (Art)	3	4	6
Stores (Baked Goods)	3	4	6
Stores (Beer)	3	4	6
Stores (Book)	3	4	6
Stores (Camera)	3	4	6
Stores (Candy)	3	4	6
Column 1	2	3	4

Table 11.2.1.1.K.<sup>(1)(4)(6)</sup> (Cont'd)  
 Hazard Index  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group E	Occupancy H.I. <sup>(5)</sup>		
	Small	Medium	Large
Stores (Clothing)	3	4	6
Stores (Drugs)	4	4	6
Stores (Electronic)	3	4	6
Stores (Floor Coverings)	4	5	7
Stores (Food)	3	3	6
Stores (Furniture/Appliances)	3	4	6
Stores (Hardware)	4	5	7
Stores (Health)	4	4	6
Stores (Hobby)	3	4	6
Stores (Jewellery)	3	3	5
Stores (Paint/Wallpaper)	4	5	7
Stores (Pet)	3	4	6
Stores (Records/Tapes)	3	4	6
Stores (Spirits)	4	5	7
Stores (Toys)	4	5	7
Stores (Variety)	4	4	6
Stores (Video Sales/Rental)	3	4	6
Supermarkets	3	4	6
Column 1	2	3	4

**Notes to Table 11.2.1.1.K.:**

r <sub>5</sub> (1)	<i>Building Size (Maximum)<sup>(2)(3)</sup></i>	
	<ul style="list-style-type: none"> <li>– 600 m<sup>2</sup> / 2 storey</li> <li>– 250 m<sup>2</sup> / 3 storey (<i>Public Heritage Building</i>)</li> <li>– 800 m<sup>2</sup> / 3 storey</li> <li>– Any area / up to 18 m high, measured between <i>grade</i> and the floor level of the top storey</li> <li>– Over 18 m high, measured between <i>grade</i> and the floor level of the top storey</li> </ul>	Small Small Medium Large H.I. = 7

- r<sub>5</sub> (2) Sizes are based on *building area* and *building height*, unless noted.
- (3) *Building size* is based on the existing *building* facing one *street*.
- (4) For existing *buildings* facing multiple *streets*, see Sentence 11.2.1.1.(2) and Table 11.4.3.4.A.
- (5) When the size of a *building* falls into more than one category, the *H.I.* for the least restrictive is permitted to be used.
- (6) All *buildings* 1 500 m<sup>2</sup> and over are to be *sprinklered*.

Table 11.2.1.1.L.<sup>(1)(4)(5)</sup>  
**Hazard Index**  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group F Division 1	Occupancy H.I. <sup>(3)</sup>		
	Small	Medium	Large
Ammunition Manufacturing and Storage	3	6	8
Black Powder Manufacturing and Storage	3	6	8
Bulk Plants for Flammable Liquids	3	6	8
Bulk Storage Warehouse (Hazardous Substances)	3	6	8
Cereal and Feed Mills	3	6	8
Chemical Manufacturing/Processing Plant	3	6	8
<i>Distilleries</i>	3	6	8
Dry Cleaning Plants (Flammable)	3	6	8
Explosives Manufacturing and Storage	3	6	8
Fertilizer Manufacturing Plants	3	6	8
Fireworks Manufacturing and Storage	3	6	8
Flour Mills	3	6	8
Gas (Flammable) Compressor Stations	3	6	8
Gas (Flammable) Manufacturing and Storage	3	6	8
Grain Elevators	3	6	8
Lacquer Factories	3	6	8
Loading Area for all Group F, Division 1	3	6	8
Mattress Factories (High Fire Load)	3	6	8
Paint/Varnish/Pyroxylin Factories	3	6	8
Petrochemical Plants	3	6	8
Refineries	3	6	8
Rubber Processing Plants	3	6	8
Spray Painting Operations	3	6	8
Waste Paper Processing Plants (Dry)	3	6	8
Column 1	2	3	4

**Notes to Table 11.2.1.1.L.:**

(1) <i>Building Size (Maximum)<sup>(2)</sup></i>	
- 400 m <sup>2</sup> / 2 storey	Small
- 600 m <sup>2</sup> / 4 storey	Medium
- 1 500 m <sup>2</sup> / 4 storey	Large

- (2) Sizes are based on *building area* and *building height*.
- (3) When the size of a *building* falls into more than one category, the *H.I.* for the least restrictive is permitted to be used.
- (4) All *buildings* 1 500 m<sup>2</sup> and over are to be *sprinklered*.
- (5) All floor assemblies shall be *fire separations*.



Table 11.2.1.1.M.<sup>(1)(4)(6)</sup>  
 Hazard Index  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group F Division 2	Occupancy H.I. <sup>(5)</sup>		
	Small	Medium	Large
Aircraft Hangars	3	5	6
Abattoirs	3	4	5
Bakeries	3	5	6
Body Shops	3	5	6
Candy Plants	3	4	5
Cold Storage Plants <i>Combustible</i> Insulation Flammable Refrigerant <i>Combustible</i> Packaging	3	5	7
<i>Combustible</i> Insulation Flammable Refrigerant Noncombustible Packaging	3	5	6
<i>Combustible</i> Insulation Non-Flammable Refrigerant Noncombustible Packaging	3	4	5
Noncombustible Insulation Non-Flammable Refrigerant Noncombustible Packaging	2	3	4
Dry Cleaning Establishments (Non-flammable or Non-explosive)	3	4	5
Electrical Substations	3	4	5
Factories (High Fire Load)	3	5	6
Freight Depots (High Fire Load)	3	5	6
Helicopter Landings (On Roof)	3	4	5
Laboratories (High Fire Load)	3	5	6
Laundries (Not Self-Serve)	3	4	5
Manufacturer Sales (High Fire Load)	3	5	6
Mattress Factories	3	4	5
Meat Packing Plants	3	4	5
Column 1	2	3	4

Table 11.2.1.1.M.<sup>(1)(4)(6)</sup> (Cont'd)  
 Hazard Index  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group F Division 2	Occupancy H.I. <sup>(5)</sup>		
	Small	Medium	Large
Packaging Manufacturers (Cellulose)	3	4	5
Packaging Manufacturers (Noncombustible)	2	3	4
Packaging Manufacturers (Plastics)	3	5	6
Paper Processing Plants (Wet)	3	5	6
Planing Mills	3	5	6
Printing Plants	3	4	5
<i>Public Heritage Buildings</i>	3	3	—
Repair Garages	3	5	6
Sample Display Rooms (High Fire Load)	3	5	6
Self-Service Storage Buildings	3	4	5
Service Stations (No Spray Painting)	3	5	6
Storage Rooms (High Fire Load)	3	5	6
Television Studios (No Audience)	3	4	5
Tire Storage	3	5	6
Warehouses (High Fire Load)	3	5	6
Welding Shops	3	5	6
Wholesale Rooms (High Fire Load)	3	5	6
Wood Working Factories	3	5	6
Workshops (High Fire Load)	3	5	6
Column 1	2	3	4

**Notes to Table 11.2.1.1.M.:**

r <sub>5</sub> (1)	<i>Building Size (Maximum)<sup>(2)(3)</sup></i>	
	– 600 m <sup>2</sup> / 2 storey	Small
	– 800 m <sup>2</sup> / 4 storey	Medium
	– 600 m <sup>2</sup> / 3 storey ( <i>Public Heritage Building</i> )	Medium
	– Any area / 6 storey not exceeding 18 m high, measured between <i>grade</i> and the floor level of the top storey	Large
	– Over 18 m high, measured between <i>grade</i> and the floor level of the top storey	H.I. = 7

- r<sub>5</sub> (2) Sizes are based on *building area* and *building height*, unless noted.  
 (3) *Building size* is based on the existing *building* facing one *street*.  
 (4) For existing *buildings* facing multiple *streets*, see Sentence 11.2.1.1.(2) and Table 11.4.3.4.A.  
 (5) When the size of a *building* falls into more than one category, the *H.I.* for the least restrictive is permitted to be used.  
 (6) All *buildings* 1 500 m<sup>2</sup> and over are to be *sprinklered*.

Table 11.2.1.1.N.<sup>(1)(4)</sup>  
 Hazard Index  
 Forming Part of Sentences 11.2.1.1.(1) and (2)

Group F Division 3	Occupancy H.I. <sup>(5)</sup>		
	Small	Medium	Large
Creameries	2	2	3
Factories (Low Fire Load)	2	3	4
Freight Depots (Low Fire Load)	2	3	4
Laboratories (Low Fire Load)	2	3	4
Manufacturers Sales (Low Fire Load)	2	3	4
Power Plants	3	4	5
<i>Public Heritage Buildings</i>	3	3	—
Sample Display Rooms (Low Fire Load)	2	3	4
Storage Garages	2	3	4
Storage Rooms (Low Fire Load)	2	3	4
Warehouses (Low Fire Load)	2	3	4
Wholesale Rooms (Low Fire Load)	2	3	4
Workshops (Low Fire Load)	2	3	4
Column 1	2	3	4

**Notes to Table 11.2.1.1.N.:**

r5 (1)	<i>Building Size (Maximum)<sup>(2)(3)</sup></i>	
	– 800 m <sup>2</sup> / 2 storey	Small
	– 1 200 m <sup>2</sup> / 4 storey	Medium
	– 600 m <sup>2</sup> / 3 storey ( <i>Public Heritage Building</i> )	Medium
	– Any area / 6 storey not exceeding 18 m high, measured between <i>grade</i> and the floor level of the top storey	Large
	– Over 18 m, but not exceeding 36 m high, measured between <i>grade</i> and the floor level of the top storey	H.I. = 5
	– Over 36 m high, measured between <i>grade</i> and the floor level of the top storey	H.I. = 6

r5 (2) Sizes are based on *building area* and *building height*, unless noted.

(3) *Building size* is based on the existing *building* facing one *street*.

(4) For existing *buildings* facing multiple *streets*, see Sentence 11.2.1.1.(2) and Table 11.4.3.4.A.

(5) When the size of a *building* falls into more than one category, the *H.I.* for the least restrictive is permitted to be used.

**Table 11.4.3.3.**  
**For Evaluation and Upgrading of Early Warning/Evacuation**  
 Forming Part of Sentences 11.4.3.3.(1) and 11.4.3.4.(3)

Notes	Early Warning and Evacuation, Evaluation and Upgrading	Part 11 <i>Compliance Alternative</i> <sup>(1)</sup>
(2)	Early warning and evacuation to be checked against (a) <i>access to exit</i> widths based on <i>occupant load</i> in Subsection 3.3.1. or 9.9.3.; (b) <i>exit</i> widths based on <i>occupant load</i> in Subsection 3.4.3. or 9.9.3.; (c) <i>exit</i> signs in Subsection 3.4.5. or 9.9.11.; (d) lighting of <i>exits</i> , lighting of <i>access to exits</i> and emergency lighting in Subsection 3.2.7. or 9.9.12.; (e) fire alarm system in Subsection 3.2.4. or 9.10.18.; (f) <i>smoke alarms</i> in Subsection 9.10.19.; (g) travel distance and number of <i>exits</i> in other Parts; and (h) door release hardware requirements in Articles 3.3.1.12. and 3.4.6.16., and deficiencies shall be upgraded.	EARLY WARNING (a) <i>Compliance alternatives</i> as listed may be used.  EVACUATION (b) <i>Compliance alternatives</i> as listed to <i>access to exit</i> and <i>exit</i> widths, number of <i>exits</i> , door release hardware, and travel distance may be used.
(3)	Early warning and evacuation to be checked against (a) <i>access to exit</i> widths based on <i>occupant load</i> in Subsection 3.3.1. or 9.9.3.; (b) <i>exit</i> widths based on <i>occupant load</i> in Subsection 3.4.3. or 9.9.3.; (c) <i>exit</i> signs in Subsection 3.4.5. or 9.9.11.; (d) lighting of <i>exits</i> , lighting of <i>access to exits</i> and emergency lighting in Subsection 3.2.7. or 9.9.12.; (e) fire alarm system in Subsection 3.2.4. or 9.10.18.; (f) <i>smoke alarms</i> in Subsection 9.10.19.; (g) travel distance and number of <i>exits</i> in other Parts; (h) smoke control measures, and at least one elevator to permit transport of firefighters to all floors in <i>hotels</i> whose floor level is more than 18 m high measured between <i>grade</i> and floor level of the top <i>storey</i> as per Subsection 3.2.6., and (i) door release hardware requirements in Articles 3.3.1.12. and 3.4.6.16., and deficiencies shall be upgraded.	EARLY WARNING (a) <i>Compliance alternatives</i> as listed may be used.  EVACUATION (b) <i>Compliance alternatives</i> as listed to <i>access to exit</i> and <i>exit</i> widths, number of <i>exits</i> , door release hardware, and travel distance may be used.
Column 1	2	3

**Notes to Table 11.4.3.3.:**

- (1) See Tables 11.5.1.1.A. to 11.5.1.1.F. for *compliance alternatives* that may be used.
- (2) Applies to change of *major occupancy* to one of equal or lesser hazard, and to increase in *occupant load* by 15% or less.
- (3) Applies to change of *major occupancy* to one of greater hazard, and to increase in *occupant load* greater than 15%.

## 12.2.4. Motion Sensors

### 12.2.4.1. Motion Sensors

- (1) Lighting installed to provide the minimum illumination levels required by this Code may be controlled by motion sensors except where the lighting,
  - (a) is installed in an *exit*,
  - (b) is installed in a corridor serving patients or residents in a Group B, Division 2 or Division 3 *occupancy*, or
  - (c) is required to conform to Sentence 3.2.7.1.(6).
- (2) Where motion sensors are used to control minimum lighting in a *public corridor* or corridor providing *access to exit* for the public, the motion sensors shall be installed with switch controllers equipped for fail-safe operation and illumination timers set for a minimum 15-minute duration.
- (3) A motion sensor shall not be used to control emergency lighting.

## Section 12.3. Energy Efficiency for Buildings of Residential Occupancy Within the Scope of Part 9

### 12.3.1. General

#### 12.3.1.1. Application

- r<sub>3</sub> (1) This Section applies to the energy efficiency of a *building* or part of a *building of residential occupancy* that is within the scope of Part 9 and is intended for occupancy on a continuing basis during the winter months.

#### 12.3.1.2. Windows and Sliding Glass Doors

- (1) The energy rating and the overall coefficient of heat transfer required for windows and sliding glass doors shall be determined in conformance with,
  - (a) CAN/CSA-A440.2, “Fenestration Energy Performance”, or
  - (b) NFRC 100, “Procedure for Determining Fenestration Product U-factors” and NFRC 200, “Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence”.

#### 12.3.1.3. Temperature Control in Dwelling Units

- (1) Except as provided in Sentence (3) and except where space heating energy is provided by a solid fuel-burning *appliance* or a ground source heat pump, the indoor air temperature in a *dwelling unit* shall be controlled by at least one programmable thermostatic control device.
- (2) The programmable thermostatic control device required in Sentence (1) shall,
  - (a) allow the setting of different air temperatures for at least,
    - (i) four time periods per day, and
    - (ii) two different day-types per week,
  - (b) include a manual override, and
  - (c) allow the setting of the air temperature to,
    - (i) 13°C or lower in heating mode, and
    - (ii) 29°C or higher in cooling mode, where *air-conditioning* is provided.

- (3) A manual thermostatic control device is permitted if it,
  - (a) controls a heating or cooling system where the heating or cooling capacity is not more than 2 kW, or
  - (b) serves an individual room or space.

#### 12.3.1.4. Hot Water Piping Insulation

- (1) Hot water pipes that are vertically connected to a hot water storage tank shall have heat traps on both inlet and outlet piping as close as practical to the tank, except where the tank,
  - (a) has an integral heat trap, or
  - (b) serves a recirculating system.
- (2) The first 2.5 m of hot water outlet piping of a hot water storage tank serving a non-recirculating system shall be insulated to provide a thermal resistance of not less than RSI 0.62.
- (3) The inlet pipe of a hot water storage tank between the heat trap and the tank serving a non-recirculating system shall be insulated to provide a thermal resistance of not less than RSI 0.62.

#### 12.3.1.5. Residential Furnaces After December 31, 2014

- (1) Sentence (2) applies to *construction* for which a permit has been applied for after December 31, 2014.
- (2) A furnace serving a *dwelling unit* shall be equipped with a brushless direct current motor. (See Appendix A.)

r<sub>3</sub>  
e<sub>3</sub>

#### 12.3.1.6. Energy Supply for Kitchen and Laundry Facilities After December 31, 2014

- (1) This Article applies to *construction* for which a permit has been applied for after December 31, 2014.
- (2) In order to supply energy to cooking appliances and clothes dryers, every kitchen and laundry space shall be provided with,
  - (a) an electrical outlet,
  - (b) a natural gas line, or
  - (c) a propane line.

## Section 12.4. Water Efficiency

### 12.4.1. General

#### 12.4.1.1. Plumbing Systems

- (1) All *buildings* shall conform to the water efficiency requirements of Subsection 7.6.4.

# Part 1

## General

### Section 1.1. Administration

#### 1.1.1. Administration

##### 1.1.1.1. Conformance with Administrative Requirements

- (1) This Code shall be administered in conformance with the Act.

### Section 1.2. Design and General Review

#### 1.2.1. Design

##### r<sub>5</sub> 1.2.1.1. Application

- (1) Article 1.2.1.2. applies with respect to a *building* described in clause 11(3)(a) or (b) of the *Architects Act* or subsection 12(4) or clause 12(5)(a) of the *Professional Engineers Act*.

##### r<sub>5</sub> 1.2.1.2. Design by Architect or Professional Engineer (See Appendix A.)

- (1) Where the *foundations* of a *building* are to be *constructed* below the level of the footings of an adjacent *building* and within the angle of repose of the *soil*, as drawn from the bottom of the footings, the *foundations* shall be designed by a *professional engineer*.

- (2) A sprinkler protected glazed wall assembly described in Article 3.1.8.18. of Division B shall be designed by a *professional engineer*.

- (3) A *shelf and rack storage system* described in Section 3.16. of Division B shall be designed by a *professional engineer*.

- (4) The time-based egress analysis for a *shelf and rack storage system* described in Sentence 3.16.1.7.(7) of Division B shall be prepared or provided by an *architect* or a *professional engineer* or a combination of both.

- (5) The supporting framing structure and anchorage system for a tent occupying an area greater than 225 m<sup>2</sup> shall be designed by a *professional engineer*.

- (6) A sign structure attached in any manner to a *building* shall be designed by an *architect* or a *professional engineer* or a combination of both where it is,

- (a) a projecting sign that weighs more than 115 kg, or
- (b) a roof sign that has any face that is more than 10 m<sup>2</sup>.

(7) A projecting sign attached in any manner to a parapet wall shall be designed by an *architect* or a *professional engineer* or a combination of both.

## 1.2.2. General Review

### 1.2.2.1. General Review by Architect or Professional Engineer (See Appendix A.)

- r<sub>5</sub> (1) The *construction*, including, for greater certainty, enlargement or alteration, of every *building* or part of it described in Table 1.2.2.1. shall be reviewed by an *architect* or a *professional engineer* or a combination of both as set out in Column 3 of the Table.
- r<sub>5</sub> (2) A person who intends to *construct* or have *constructed* a *building* or part of it required by Sentences (1) and (4) to (9) to be reviewed by an *architect* or a *professional engineer* or a combination of both, shall ensure that an *architect*, *professional engineer* or both are retained to undertake the general review of the *construction* of the *building* in accordance with the performance standards of the Ontario Association of Architects or the Association of Professional Engineers of Ontario, as applicable, to determine whether the *construction* is in general conformity with the plans, sketches, drawings, graphic representations, specifications and other documents that form the basis for the issuance of a permit under section 8 of the Act or any changes to it authorized by the *chief building official*.
- (3) The *architect*, *professional engineer* or both who have been retained to undertake the general review of the *construction* of a *building*, shall forward copies of written reports arising out of the general review to the *chief building official* or *registered code agency*, as the case may be.
- (4) Where the *foundations* of a *building* are to be *constructed* below the level of the footings of an adjacent *building* and within the angle of repose of the *soil*, as drawn from the bottom of the footings, the *construction* of the *foundations* shall be reviewed by a *professional engineer*.
- (5) The *construction* of a sprinkler protected glazed wall assembly described in Article 3.1.8.18. of Division B shall be reviewed by a *professional engineer*.
- (6) The *construction* of a *shelf and rack storage system* described in Section 3.16. of Division B shall be reviewed by a *professional engineer*.
- (7) The *construction* of a supporting framing structure and anchorage system for a tent occupying an area greater than 225 m<sup>2</sup> shall be reviewed by a *professional engineer*.
- r<sub>5</sub> (8) The *construction* of a sign structure shall be reviewed by an *architect* or a *professional engineer* or a combination of both, where the sign is,
- a ground sign that exceeds 7.5 m in height above the adjacent finished ground,
  - a projecting sign that weighs more than 115 kg, or
  - a roof sign that has any face that is more than 10 m<sup>2</sup>.
- r<sub>5</sub> (9) The *construction* of a projecting sign attached in any manner to a parapet wall shall be reviewed by an *architect*, *professional engineer* or a combination of both.



Table 1.2.2.1.<sup>(4)</sup>  
General Review  
Forming Part of Sentence 1.2.2.1.(1)

	<i>Building Classification by Major Occupancy</i>	<i>Building Description</i>	General Review by:
	<i>Assembly occupancy only</i>	Every <i>building</i>	<i>Architect</i> and <i>professional engineer</i> <sup>(1)</sup>
	<i>Assembly occupancy</i> and any other <i>major occupancy</i> except <i>industrial</i>	Every <i>building</i>	<i>Architect</i> and <i>professional engineer</i> <sup>(1)</sup>
<b>r<sub>1</sub></b>	<i>Care, care and treatment</i> or <i>detention occupancy</i> only	Every <i>building</i>	<i>Architect</i> and <i>professional engineer</i> <sup>(1)</sup>
<b>r<sub>1</sub></b>	<i>Care, care and treatment</i> or <i>detention occupancy</i> and any other <i>major occupancy</i> except <i>industrial</i>	Every <i>building</i>	<i>Architect</i> and <i>professional engineer</i> <sup>(1)</sup>
	<i>Residential occupancy</i> only	Every <i>building</i> that exceeds 3 <i>storeys</i> in <i>building height</i>	<i>Architect</i> and <i>professional engineer</i> <sup>(1)</sup>
		Every <i>building</i> that exceeds 600 m <sup>2</sup> in <i>gross area</i> and that contains a <i>residential occupancy</i> other than a <i>dwelling unit</i> or <i>dwelling units</i>	<i>Architect</i> <sup>(2)</sup>
	<i>Residential occupancy</i> only	Every <i>building</i> that exceeds 600 m <sup>2</sup> in <i>gross area</i> and contains a <i>dwelling unit</i> above another <i>dwelling unit</i>	<i>Architect</i> <sup>(2)</sup>
		Every <i>building</i> that exceeds 600 m <sup>2</sup> in <i>building area</i> , contains 3 or more <i>dwelling units</i> and has no <i>dwelling unit</i> above another <i>dwelling unit</i>	<i>Architect</i> <sup>(2)</sup>
<b>r<sub>1</sub></b>	<i>Residential occupancy</i> and any other <i>major occupancy</i> except <i>assembly, care, care and treatment, detention</i> or <i>industrial occupancy</i>	Every <i>building</i> that exceeds 600 m <sup>2</sup> in <i>gross area</i> or 3 <i>storeys</i> in <i>building height</i>	<i>Architect</i> and <i>professional engineer</i> <sup>(1)</sup>
	<i>Business and personal services occupancy</i> only	Every <i>building</i> that exceeds 600 m <sup>2</sup> in <i>gross area</i> or 3 <i>storeys</i> in <i>building height</i>	<i>Architect</i> and <i>professional engineer</i> <sup>(1)</sup>
<b>r<sub>1</sub></b>	<i>Business and personal services occupancy</i> and any other <i>major occupancy</i> except <i>assembly, care, care and treatment, detention</i> or <i>industrial occupancy</i>	Every <i>building</i> that exceeds 600 m <sup>2</sup> in <i>gross area</i> or 3 <i>storeys</i> in <i>building height</i>	<i>Architect</i> and <i>professional engineer</i> <sup>(1)</sup>
	<i>Mercantile occupancy</i> only	Every <i>building</i> that exceeds 600 m <sup>2</sup> in <i>gross area</i> or 3 <i>storeys</i> in <i>building height</i>	<i>Architect</i> and <i>professional engineer</i> <sup>(1)</sup>
<b>r<sub>1</sub></b>	<i>Mercantile occupancy</i> and any other <i>major occupancy</i> except <i>assembly, care, care and treatment, detention</i> or <i>industrial occupancy</i>	Every <i>building</i> that exceeds 600 m <sup>2</sup> in <i>gross area</i> or 3 <i>storeys</i> in <i>building height</i>	<i>Architect</i> and <i>professional engineer</i> <sup>(1)</sup>
	<i>Industrial occupancy</i> only and where there are no subsidiary occupancies	Every <i>building</i> that exceeds 600 m <sup>2</sup> in <i>gross area</i> or 3 <i>storeys</i> in <i>building height</i>	<i>Architect</i> or <i>professional engineer</i> <sup>(3)</sup>
	<i>Industrial occupancy</i> and one or more other <i>major occupancies</i> where the portion of the area occupied by one of the other <i>major</i> or subsidiary <i>occupancies</i> exceeds 600 m <sup>2</sup>	The non-industrial portion of every <i>building</i>	<i>Architect</i> and <i>professional engineer</i> <sup>(1)</sup>
		The industrial portion of every <i>building</i>	<i>Architect</i> or <i>professional engineer</i> <sup>(3)</sup>
	<i>Industrial occupancy</i> and one or more other <i>major occupancies</i> where no portion of the area occupied by one of the other <i>major</i> or subsidiary <i>occupancies</i> exceeds 600 m <sup>2</sup>	Every <i>building</i> that exceeds 600 m <sup>2</sup> in <i>gross area</i> or 3 <i>storeys</i> in <i>building height</i>	<i>Architect</i> or <i>professional engineer</i> <sup>(3)</sup>
	Column 1	2	3

**Notes to Table 1.2.2.1.:**

- (1) An *architect* shall provide general review services within the practice of architecture and a *professional engineer* shall provide general review services within the practice of professional engineering.
- (2) An *architect* may engage a *professional engineer* to provide general review services within the practice of professional engineering.
- (3) Only a *professional engineer* may provide general review services within the practice of professional engineering.
- r<sub>5</sub>** (4) Requirements for general review by an *architect* or a *professional engineer* or a combination of both for the *construction*, including, for greater certainty, enlargement or alteration, of a *building* are set out in the *Architects Act* and the *Professional Engineers Act*.

### 1.2.2.2. Restriction for General Review

- (1) Only an *architect* may carry out or provide the general review of the *construction* of a *building*,
  - (a) that is *constructed* in accordance with a design prepared or provided by an *architect*, or
  - (b) in relation to services that are provided by an *architect* in connection with the design in accordance with which the *building* is *constructed*.
- (2) Only a *professional engineer* may carry out or provide the general review of the *construction* of a *building*,
  - (a) that is *constructed* in accordance with a design prepared or provided by a *professional engineer*, or
  - (b) in relation to services that are provided by a *professional engineer* in connection with the design in accordance with which the *building* is *constructed*.

### 1.2.2.3. Demolition of a Building

- (1) The applicant for a permit respecting the *demolition* of a *building* shall retain a *professional engineer* to undertake the general review of the project during *demolition*, where,
  - (a) the *building* exceeds 3 *storeys* in *building height* or 600 m<sup>2</sup> in *building area*,
  - (b) the *building* structure includes pre-tensioned or post-tensioned members,
  - (c) it is proposed that the *demolition* will extend below the level of the footings of any adjacent *building* and occur within the angle of repose of the *soil*, as drawn from the bottom of such footings, or
  - (d) explosives or a laser are to be used during the course of *demolition*.

## Section 1.3. Permits and Inspections

### 1.3.1. Permits

#### 1.3.1.1. Requirement for Permits

- r<sub>3</sub> (1) A person is exempt from the requirement to obtain a permit under section 8 of the Act,
  - (a) for the *demolition* of a *building* located on a farm,
  - (b) subject to Sentence (2), for the *construction* or *demolition* of a *building* in territory without municipal organization, or
  - (c) for the *construction* of a Class 1 *sewage system*.
- (2) The exemption in Clause (1)(b) from the requirement to obtain a permit does not apply to the *construction* of a *sewage system* in territory without municipal organization.
- (3) The application for a permit respecting the *demolition* of a *building* to which Sentence 1.2.2.3.(1) applies shall include descriptions of the structural design characteristics of the *building* and the method of *demolition* of the *building*.
- (4) No person shall commence *demolition* of a *building* or any part of a *building* before the *building* has been vacated by the occupants except where the safety of the occupants is not affected.
- (5) A tent or group of tents is exempt from the requirement to obtain a permit under section 8 of the Act and is exempt from compliance with the Code provided that the tent or group of tents are,
  - (a) not more than 60 m<sup>2</sup> in aggregate ground area,
  - (b) not attached to a *building*, and
  - (c) constructed more than 3 m from other structures.

**1.3.1.4. Permits Under Section 10 of the Act**

- r<sub>1</sub>** (1) Except as provided in Sentence (2), the following changes in use of a *building* or part of a *building* constitute an increase in hazard for the purposes of section 10 of the Act and require a permit under section 10 of the Act:
- (a) a change of the *major occupancy* of all or part of a *building* that is designated with a “Y” in Table 1.3.1.4. takes place,
  - (b) a *suite* of a Group C *major occupancy* is converted into more than one *suite* of Group C *major occupancy*,
  - (c) a *suite* or part of a *suite* of a Group A, Division 2 or a Group A, Division 4 *major occupancy* is converted to a *gaming premises*,
  - (d) a *farm building* or part of a *farm building* is changed to a *major occupancy*,
  - (e) a *building* or part of a *building* is changed to a *post-disaster building*,
  - (f) a *building* or part of a *building* is changed to a retirement home regulated under the *Retirement Homes Act, 2010*, or
  - (g) the use of a *building* or part of a *building* is changed and the previous *major occupancy* of the *building* or part of the *building* cannot be determined.
- (2) A person is exempt from the requirement to obtain a permit under section 10 of the Act where the change in use of the *building* or part of the *building* will result from proposed *construction* and a permit under section 8 of the Act has been issued in respect of such *construction*.
- (3) A person is exempt from the requirement to obtain a permit under section 10 of the Act for the change of use of a *building* in unorganized territory.

Table 1.3.1.4.  
Permit Required for Change of Use  
Forming Part of Sentence 1.3.1.4.(1)<sup>(1)</sup>

		FROM <sup>(2)</sup>												
		A-1	A-2	A-3	A-4	B-1	B-2	B-3	C	D	E	F-1	F-2	F-3
TO <sup>(3)</sup>	A-1	N <sup>(5)</sup>	Y	Y	N <sup>(5)</sup>	Y	Y	Y	Y	Y	Y	Y	Y	Y
	A-2	Y	N <sup>(5)</sup>	Y	N <sup>(5)</sup>	Y	Y	Y	Y	Y	Y	Y	Y	Y
	A-3	Y	Y	N <sup>(5)</sup>	N <sup>(5)</sup>	Y	Y	Y	Y	Y	Y	Y	Y	Y
	A-4	Y	Y	Y	N <sup>(5)</sup>	Y	Y	Y	Y	Y	Y	Y	Y	Y
	B-1	Y	Y	Y	N <sup>(5)</sup>	N <sup>(5)</sup>	Y	Y	Y	Y	Y	Y	Y	Y
	B-2	Y	Y	Y	N <sup>(5)</sup>	Y	N <sup>(5)</sup>	Y	Y	Y	Y	Y	Y	Y
	B-3	Y	Y	Y	N <sup>(5)</sup>	Y	N <sup>(5)</sup>	N <sup>(5)</sup>	Y	Y	Y	Y	Y	Y
	C	Y	Y	Y	N <sup>(5)</sup>	Y	N <sup>(5)</sup>	N <sup>(5)</sup>	(4)	Y	Y	Y	Y	Y
	D	N <sup>(5)</sup>	N <sup>(5)</sup>	Y	N <sup>(5)</sup>	Y	N <sup>(5)</sup>	N <sup>(5)</sup>	Y	N <sup>(5)</sup>	Y	Y	N <sup>(5)</sup>	N <sup>(5)</sup>
	E	Y	Y	Y	N <sup>(5)</sup>	Y	Y	Y	Y	Y	N <sup>(5)</sup>	Y	Y	Y
	F-1	Y	Y	Y	N <sup>(5)</sup>	Y	Y	Y	Y	Y	Y	N <sup>(5)</sup>	Y	Y
	F-2	Y	Y	Y	N <sup>(5)</sup>	Y	Y	Y	Y	Y	Y	N <sup>(5)</sup>	N <sup>(5)</sup>	Y
F-3	Y	N <sup>(5)</sup>	Y	N <sup>(5)</sup>	Y	Y	Y	Y	Y	N <sup>(5)</sup>	N <sup>(5)</sup>	N <sup>(5)</sup>	N <sup>(5)</sup>	
Col. 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

**Notes to Table 1.3.1.4.:**

- r<sub>5</sub>** (1) See Clause 1.3.1.4.(1)(a), Subclause 3.17.1.1.(1)(a)(i) of Division B and Clause 9.40.1.1.(1)(a) of Division B.  
 (2) *Major occupancy* of all or part of a *building* before change of use.  
 (3) *Major occupancy* of all or part of a *building* after change of use.
- r<sub>5</sub>** (4) See Clause 1.3.1.4.(1)(b), Subclause 3.17.1.1.(1)(a)(ii) of Division B and Clauses 9.40.1.1.(1)(b) and 11.4.2.3.(1)(b) of Division B.  
 (5) “N” is only applicable where the *major occupancy* of the entire *suite* is changed.

### 1.3.1.5. Conditional Permits

(1) The *chief building official* shall not issue a conditional permit for any stage of *construction* under subsection 8(3) of the Act unless compliance with the following applicable laws has been achieved in respect of the proposed *building* or *construction*:

- (a) regulations made by a conservation authority under clause 28(1)(c) of the *Conservation Authorities Act* with respect to permission of the authority for the *construction* of a *building* or structure if, in the opinion of the authority, the control of flooding, erosion, dynamic beaches or pollution or the conservation of land may be affected by the development,
- (b) section 5 of the *Environmental Assessment Act* with respect to the approval of the Minister or the Environmental Review Tribunal to proceed with an undertaking,
- (c) subsection 24(3) of the *Niagara Escarpment Planning and Development Act*,
- (d) subsection 27(3) of the *Ontario Heritage Act*,
- (e) subsection 30(2) of the *Ontario Heritage Act* with respect to a consent of the council of a *municipality* to the alteration or *demolition* of a *building* where the council of the *municipality* has given a notice of intent to designate the *building* under subsection 29(3) of that Act,
- (f) section 33 of the *Ontario Heritage Act* with respect to the consent of the council of a *municipality* for the alteration of property,
- (g) section 34 of the *Ontario Heritage Act* with respect to the consent of the council of a *municipality* for the *demolition* of a *building*,
- (h) section 34.5 of the *Ontario Heritage Act* with respect to the consent of the Minister to the alteration or *demolition* of a designated *building*,
- (i) subsection 34.7(2) of the *Ontario Heritage Act* with respect to a consent of the Minister to the alteration or *demolition* of a *building* where the Minister has given a notice of intent to designate the *building* under section 34.6 of that Act,
- (j) by-laws made under section 40.1 of the *Ontario Heritage Act*,
- (k) section 42 of the *Ontario Heritage Act* with respect to the permit given by the council of a *municipality* for the erection, alteration or *demolition* of a *building*.

(2) For the purposes of issuing a conditional permit under subsection 8(3) of the Act, a person is exempt from the requirement in clause 8(3)(a) of the Act of compliance with by-laws passed under sections 34 and 38 of the *Planning Act* where,

- (a) a committee of adjustment has made a decision under section 45 of the *Planning Act* authorizing one or more minor variances from the provisions of any by-laws made under sections 34 and 38 of that Act,
- (b) such minor variance or variances result in the achievement of full compliance with such by-laws, and
- (c) no person informed the committee of adjustment of objections to the minor variances either in writing or in person at the hearing of the application.

(3) For the purposes of issuing a conditional permit under subsection 8(3) of the Act, a person is exempt from the requirement in clause 8(3)(a) of the Act of compliance with by-laws passed under sections 34 and 38 of the *Planning Act* where the *construction* in respect of which the conditional permit is issued is required in order to comply with an order issued under subsection 21(1) of the *Fire Protection and Prevention Act, 1997* or under subsection 15.9(4) of the Act.

(4) A permit issued under subsection 8(3) of the Act shall indicate its conditional nature.

### 1.3.1.6. Information to be Given to Tarion Warranty Corporation

(1) This Article prescribes, for the purposes of subsection 8(8.1) of the Act, the information relating to permits issued under section 8 of the Act and the applications for those permits that the *chief building official* is required to give to *Tarion Warranty Corporation* and the time within which the information is required to be given.

(2) The *chief building official* shall give the following information to *Tarion Warranty Corporation* with respect to permits issued under section 8 of the Act in respect of the *construction* of *buildings* described in Sentence (4),

- (a) the dates the permits are issued and the numbers or other identifying symbols for the permits, and

- (b) the information contained in the application forms submitted in respect of the permits, other than the information contained in the schedules or other attachments to the application forms.
- (3) Despite Sentence (2), the *chief building official* is not required to give to *Tarion Warranty Corporation* information which relates to the extension or material alteration or repair of an existing *building*.
- (4) The *buildings* referred to in Sentence (2) are any *building* whose proposed use is classified as a Group C *major occupancy* and which is not a *boarding, lodging or rooming house* or a *building* containing a *hotel*.
- (5) The *chief building official* shall give the information described in Sentence (2) within 45 days after the day on which the permits to which the information relates are issued.
- (6) The time period described in Sentence (5) shall not include Saturdays, holidays and all other days when the offices of the *principal authority* are not open for the transaction of business with the public.

## **1.3.2. Site Documents**

### **1.3.2.1. Permit Posting**

- (1) Where a permit has been issued pursuant to the Act, the person to whom it is issued shall have the permit or a copy of it posted at all times during *construction* or *demolition* in a conspicuous place on the property in respect of which the permit was issued.

### **1.3.2.2. Documentation on Site**

- (1) The person in charge of the *construction* of the *building* shall keep and maintain on the site of the *construction*,
  - (a) at least one copy of drawings and specifications certified by the *chief building official* or a person designated by the *chief building official* to be a copy of those submitted with the application for the permit to *construct* the *building*, together with changes that are authorized by the *chief building official* or a person designated by the *chief building official*,
  - (b) copies of authorizations of the Building Materials Evaluation Commission on the basis of which the permit was issued, and
  - (c) copies of rulings of the *Minister*, made under clause 29(1)(a) or (c) of the Act, on the basis of which the permit was issued.

## **1.3.3. Occupancy of Buildings**

### **1.3.3.1. Occupancy Permit — General**

- (1) Except as permitted in Sentence 1.3.3.2.(1), a person may occupy or permit to be occupied any *building* or part of it that has not been fully completed at the date of occupation where the *chief building official* or a person designated by the *chief building official* has issued a permit authorizing occupation of the *building* or part of it prior to its completion in accordance with Sentence (3).
- r<sub>5</sub> (2) Sentence (1) does not apply in respect of the occupancy of a *building* to which Article 1.3.3.4. or 1.3.3.5. applies.
- (3) The *chief building official* or a person designated by the *chief building official* shall issue a permit authorizing occupation of a *building*, where,
  - (a) the structure of the *building* or part of it is completed to the roof,
  - (b) the enclosing walls of the *building* or part of them are completed to the roof,
  - (c) the walls enclosing the space to be occupied are completed, including balcony *guards*,
  - (d) all required *fire separations* and *closures* are completed on all *storeys* to be occupied,

- R5 (e) all required *exits* are completed, including all *fire separations*, doors, door hardware, self-closing devices, *guards* and handrails, from the uppermost floor to be occupied down to *grade* level and below if an *exit* connects with lower *storeys*,
- (f) all shafts including *closures* are completed to the floor-ceiling assembly above the *storey* to be occupied and have a temporary *fire separation* at such assembly,
- R5 (g) measures have been taken to prevent access to parts of the *building* and site that are incomplete or still under construction,
- R5 (h) floors, halls, lobbies and required *means of egress* are free of loose materials and other hazards,
- R5 (i) if *service rooms* should be in operation, required *fire separations* and *closures* are completed,
- (j) all *building drains*, *building sewers*, *water systems*, *drainage systems* and *venting systems* are complete and tested as operational for the *storeys* to be occupied,
- (k) required lighting, heating and electrical supply are provided for the *suites*, rooms and common areas to be occupied,
- (l) required lighting in corridors, stairways and *exits* is completed and operational up to and including all *storeys* to be occupied,
- (m) required standpipe, sprinkler and fire alarm systems are complete and operational up to and including all *storeys* to be occupied, together with required pumper connections for such standpipes and sprinklers,
- (n) required fire extinguishers have been installed on all *storeys* to be occupied,
- R5 (o) main garbage rooms, chutes and ancillary services are completed to all *storeys* to be occupied,
- (p) required firefighting access routes have been provided and are accessible, and
- (q) the *sewage system* has been completed and is operational.

(4) Where a *registered code agency* has been appointed to perform the functions described in clause 4.1(4)(b) or (c) of the Act in respect of the *construction* of the *building*, the *chief building official* or a person designated by the *chief building official* shall issue the permit referred to in Sentence (3) after receipt of a *certificate for the occupancy of a building not fully completed* issued by the *registered code agency* in respect of the *building*.

### 1.3.3.2. Conditions for Residential Occupancy

- (1) A person may occupy or permit to be occupied a *building* intended for *residential occupancy* that has not been fully completed at the date of occupation provided that,
- (a) the *building*,
    - (i) is of three or fewer *storeys* in *building height* and has a *building area* not exceeding 600 m<sup>2</sup>,
    - (ii) has not more than 1 *dwelling unit* above another *dwelling unit*,
    - (iii) has not more than 2 *dwelling units* sharing a common *means of egress*, and
    - (iv) has no accommodation for tourists,
  - (b) the following *building* components and systems are complete, operational and inspected:
    - (i) required *exits*, handrails and *guards*, fire alarm and detection systems, and *fire separations*,
    - (ii) required exhaust fume barriers and self-closing devices on doors between an attached or built-in garage and a *dwelling unit*,
    - (iii) water supply, sewage disposal, lighting and heating systems, and
    - (iv) protection of foamed plastics required by Article 9.10.17.10. of Division B,
  - (c) the following *building* components and systems are complete, operational, inspected and tested:
    - (i) *water systems*,
    - (ii) *building drains* and *building sewers*, and
    - (iii) *drainage systems* and *venting systems*, and
  - (d) where applicable, the *building* conforms to Article 9.1.1.7. of Division B.
- R5 (2) Sentence (1) does not apply in respect of the occupancy of a *building* to which Article 1.3.3.4. or 1.3.3.5. applies.

### 1.3.3.3. Notification

(1) Where a person has occupied or permitted the occupancy of a *building* under Article 1.3.3.1. or 1.3.3.2., such person shall notify the *chief building official* forthwith upon completion of the *building*.

**1.3.3.4. Occupancy Permit — Certain Buildings of Residential Occupancy**

(1) No person shall occupy or permit to be occupied a *building* described in Sentence (3), or part of it, unless the *chief building official* or a person designated by the *chief building official* has issued a permit authorizing occupation of the *building* or part of it in accordance with Sentence (4).

(2) This Article does not apply in respect of the *occupancy* of an existing *building*, or part of it, that has been subject to extension or material alteration or repair.

(3) A *building* referred to in Sentence (1) is a *building* intended for *residential occupancy* that,

- (a) is of three or fewer *storeys* in *building height* and has a *building area* not exceeding 600 m<sup>2</sup>,
- (b) has no accommodation for tourists,
- (c) does not have a *dwelling unit* above another *dwelling unit*, and
- (d) does not have any *dwelling units* sharing a common *means of egress*.

(4) The *chief building official* or a person designated by the *chief building official* shall issue a permit authorizing occupation of a *building* described in Sentence (3), where,

- (a) the structure of the *building* with respect to the *dwelling unit* to be occupied is substantially complete and ready to be used for its intended purpose,
- (b) the *building* envelope, including, but not limited to, cladding, roofing, windows, doors, assemblies requiring *fire-resistance ratings, closures, insulation, vapour barriers* and air barriers, with respect to the *dwelling unit* to be occupied, is substantially complete,
- (c) the walls enclosing the *dwelling unit* to be occupied conform to Sentence 9.25.2.3.(7) of Division B,
- (d) required electrical supply is provided for the *dwelling unit* to be occupied,
- (e) required firefighting access routes to the *building* have been provided and are accessible,
- (f) the following *building* components and systems are complete and operational for the *dwelling unit* to be occupied:
  - (i) required *exits, floor access and egress systems, handrails, guards, smoke alarms, carbon monoxide alarms and fire separations*, including, but not limited to, *fire stops*,
  - (ii) required exhaust fume barriers and self-closing devices on doors between an attached or built-in garage and the *dwelling unit*,
  - (iii) water supply, sewage disposal, lighting and heating systems, and
  - (iv) protection of foamed plastics required by Article 9.10.17.10. of Division B,
- (g) the following *building* components and systems are complete, operational and tested for the *dwelling unit* to be occupied:
  - (i) *water system*,
  - (ii) *building drain and building sewer*, and
  - (iii) *drainage system and venting system*,
- (h) required *plumbing fixtures* in the *dwelling unit* to be occupied are substantially complete and operational, and
- (i) where applicable, the *building* conforms to Article 9.1.1.7. of Division B with respect to the *dwelling unit* to be occupied.

(5) Where a *registered code agency* has been appointed to perform the functions described in clause 4.1(4)(b) or (c) of the Act in respect of the *construction* of a *building* described in Sentence (3), the *chief building official* or a person designated by the *chief building official* shall issue the permit referred to in Sentence (4) after receipt of a *certificate for the occupancy of a building described in Sentence 1.3.3.4.(3) of Division C* issued by the *registered code agency* in respect of the *building*.

**1.3.3.5. Occupancy Permit — Buildings Within the Scope of Article 3.2.2.43A. or 3.2.2.50A.**

(1) No person shall occupy or permit to be occupied a *building* within the scope of Article 3.2.2.43A. or 3.2.2.50A. of Division B, or part of it, unless the *chief building official* or a person designated by the *chief building official* has issued a permit authorizing occupation of the *building* or part of it in accordance with Sentence (3).

(2) This Article does not apply in respect of the occupancy of an existing *building*, or part of it, that has been subject to extension or material alteration or repair.

(3) The *chief building official* or a person designated by the *chief building official* shall issue a permit authorizing occupation of a *building* described in Sentence (1), where,

- (a) the structure of the *building* is completed to the roof,
- (b) the *building* envelope, including, but not limited to, cladding, roofing, windows, doors, assemblies requiring *fire-resistance ratings*, *closures*, insulation, *vapour barriers* and air barriers, is complete,
- (c) the walls enclosing the space to be occupied are completed, including balcony *guards*,
- (d) all required *fire separations* and *closures* are completed,
- (e) all required *exits* are completed, including all *fire separations*, doors, door hardware, self-closing devices, *guards* and handrails,
- (f) all shafts including *closures* are completed,
- (g) measures have been taken to prevent access to parts of the *building* and site that are incomplete or still under construction,
- (h) floors, halls, lobbies and required *means of egress* are free of loose materials and other hazards,
- (i) if *service rooms* should be in operation, required *fire separations* and *closures* are completed,
- (j) all *building drains*, *building sewers*, *water systems*, *drainage systems* and *venting systems* are complete and tested as operational for the *storeys* to be occupied,
- (k) required lighting, heating and electrical supply are provided for the *suites*, rooms and common areas to be occupied,
- (l) required lighting in corridors, stairways and *exits* is completed and operational,
- (m) required standpipe, sprinkler and fire alarm systems are complete and operational, together with required pumper connections for such standpipes and sprinklers,
- (n) required *smoke alarms* and carbon monoxide alarms are complete and operational,
- (o) required fire extinguishers have been installed,
- (p) main garbage rooms, chutes and ancillary services are completed to all *storeys* to be occupied,
- (q) required firefighting access routes have been provided and are accessible, and
- (r) the *sewage system* has been completed and is operational.

(4) Where a *registered code agency* has been appointed to perform the functions described in clause 4.1(4)(b) or (c) of the Act in respect of the *construction* of a *building* described in Sentence (1), the *chief building official* or a person designated by the *chief building official* shall issue the permit referred to in Sentence (3) after receipt of a *certificate for the occupancy of a building described in Sentence 1.3.3.5.(1) of Division C* issued by the *registered code agency* in respect of the *building*.

## 1.3.4. Fire Department Inspection

### 1.3.4.1. Fire Department Approval

(1) Subject to Sentence (2), if the council of a *municipality* assigns specific responsibility for the enforcement of any portion of this Code respecting fire safety matters to an *inspector* who is the chief of the fire department of the *municipality*, the *chief building official* shall not issue a permit to *construct* a *building* unless the *inspector* approves the drawings submitted with the application for the permit as complying with that portion of this Code.



- (2) If a *registered code agency* has been appointed under clause 4.1(4)(a) or (c) of the Act,
  - (a) a *municipality* shall not assign responsibility under Sentence (1) to the chief of the fire department with respect to a *building* for which the *registered code agency* has been appointed, and
  - (b) any assignment of responsibility under Sentence (1) with respect to a *building* for which the *registered code agency* is appointed shall be cancelled as of the date of the appointment.

## **1.3.5. Notices and Inspections**

### **1.3.5.1. Prescribed Notices**

- (1) This Article sets out the notices that are required under section 10.2 of the Act.
- (2) The person to whom a permit under section 8 of the Act is issued shall notify the *chief building official* or, where a *registered code agency* is appointed under the Act in respect of the *construction* to which the notice relates, the *registered code agency* of,
  - (a) readiness to *construct* footings,
  - (b) substantial completion of footings and *foundations* prior to commencement of backfilling,
  - (c) substantial completion of structural framing and ductwork and piping for heating and *air-conditioning* systems, if the *building* is within the scope of Part 9 of Division B,
  - (d) substantial completion of structural framing and roughing-in of heating, ventilation, *air-conditioning* and air-contaminant extraction equipment, if the *building* is not a *building* to which Clause (c) applies,
  - (e) substantial completion of insulation and *vapour barriers*,
  - (f) substantial completion of *air barrier systems*,
  - (g) substantial completion of all required *fire separations* and *closures* and all fire protection systems including standpipe, sprinkler, fire alarm and emergency lighting systems,
  - (h) substantial completion of fire access routes,
  - (i) readiness for inspection and testing of,
    - (i) *building sewers* and *building drains*,
    - (ii) *water service pipes*,
    - (iii) *fire service mains*,
    - (iv) *drainage systems* and *venting systems*,
    - (v) the *water distribution system*, and
    - (vi) *plumbing fixtures* and *plumbing appliances*,
  - (j) readiness for inspection of suction and gravity outlets, covers and suction piping serving outlets of an *outdoor pool* described in Clause 1.3.1.1.(1)(j) of Division A, a *public pool* or a *public spa*,
  - (k) substantial completion of the circulation / *recirculation system* of an *outdoor pool* described in Clause 1.3.1.1.(1)(j) of Division A, a *public pool* or *public spa* and substantial completion of the pool before it is first filled with water,
  - (l) readiness to *construct* the *sewage system*,
  - (m) substantial completion of the installation of the *sewage system* before the commencement of backfilling,
  - (n) substantial completion of installation of *plumbing* not located in a structure, before the commencement of backfilling,
  - (o) completion of *construction* and installation of components required to permit the issue of an occupancy permit under Sentence 1.3.3.1.(3) or to permit occupancy under Sentence 1.3.3.2.(1), if the *building* or part of the *building* to be occupied is not fully completed, and
  - (p) completion of *construction* and installation of components required to permit the issue of an occupancy permit under Sentence 1.3.3.4.(4) or 1.3.3.5.(3).

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### 1.3.5.2. Additional Notices

- (1) A by-law, resolution or regulation made by a *principal authority* under clause 7(1)(e) of the Act may require that notice of one or more of the following stages of *construction* be given by the person to whom a permit is issued under section 8 of the Act:
- (a) commencement of *construction* of the *building*,
  - (b) substantial completion of structural framing for each *storey*, if the *building* is a type of *building* that is within the scope of Division B, other than Part 9,
  - (c) commencement of *construction* of,
    - (i) masonry fireplaces and masonry *chimneys*,
    - (ii) factory-built fireplaces and allied *chimneys*, or
    - (iii) *stoves*, ranges, *space heaters* and add-on *furnaces* using solid fuels and allied *chimneys*,
  - (d) substantial completion of interior finishes,
  - (e) substantial completion of heating, ventilating, *air-conditioning* and air-contaminant extraction equipment,
  - (f) substantial completion of exterior cladding,
  - (g) substantial completion of site grading,
  - (h) substantial completion of the pool deck and dressing rooms for a *public pool* or *public spa* and readiness for inspection of the emergency stop system for a *public pool* or *public spa*,
  - (i) completion and availability of drawings of the *building* as constructed, and
  - (j) completion of a *building* for which an occupancy permit is required under Article 1.3.3.4. or 1.3.3.5.

### 1.3.5.3. Prescribed Inspections

- (1) Except as provided in Sentence (2), an *inspector* or *registered code agency*, as the case may be, shall, not later than two days after receipt of a notice given under Sentence 1.3.5.1.(2), undertake a site inspection of the *building* to which the notice relates.
- (2) Where a notice given under Sentence 1.3.5.1.(2) relates to matters described in Clause 1.3.5.1.(2)(l) or (m), an *inspector* or *registered code agency*, as the case may be, shall, not later than five days after receipt of the notice, undertake a site inspection of the *sewage system* to which the notice relates.
- (3) When undertaking an inspection required under Sentence (1) or (2), the *inspector* or *registered code agency*, as the case may be, may consider reports concerning whether the *building* or a part of the *building* complies with the Act or this Code.
- (4) The time periods referred to in Sentences (1) and (2) shall begin on the day following the day on which the notice is given.
- (5) The time periods referred to in Sentences (1) and (2) shall not include Saturdays, holidays and all other days when the offices of the *principal authority* are not open for the transaction of business with the public.

### 1.3.5.4. Construction of Sewage Systems

- (1) The following information is prescribed for the purposes of subsection 15.12(3) of the Act and must be provided to the *chief building official* before the commencement of the *construction* of a *sewage system*:
- (a) the information described in Sentence 3.3.4.1.(2) as it relates to,
    - (i) the person registered under Article 3.3.3.2., and
    - (ii) the person with the qualifications described in Clause 3.3.3.2.(1)(a) who will supervise *construction* on-site of the *sewage system*, and
  - (b) the name and telephone number of the representative of the person described in Subclause (a)(i) who may be contacted by the *chief building official* in respect of the *construction* of the *sewage system*.

### 1.3.5.5. Orders

(1) An order issued under subsection 12(2), 13(1) or (6), 14(1) or 15.10.1(2) or clause 18(1)(f) of the Act shall be in a form approved by the *Minister*.

### 1.3.6. As Constructed Plans

#### 1.3.6.1. Application (See Appendix A.)

(1) Where a by-law, resolution or regulation has been made by a *principal authority* under clause 7(1)(g) of the Act, the *chief building official* may require that *as constructed plans* for the whole of, or any part or system of, a *building* or any class of *buildings* be provided by the persons responsible for the *construction*.

## Section 1.4. Search Warrant

### 1.4.1. Forms

#### 1.4.1.1. Information & Warrant Forms

- r<sub>3</sub> (1) An information to obtain a warrant to enter and search a *building*, receptacle or place under subsection 21(1) of the Act shall be in Form 1.4.1.1.A.
- r<sub>3</sub> (2) A warrant to enter and search a *building*, receptacle or place under subsection 21(1) of the Act shall be in Form 1.4.1.1.B.

## Section 2.3. Building Materials Evaluation Commission

### 2.3.1. Application Fee

#### 2.3.1.1. Application Fee

- r<sub>5</sub> (1) The fee on an application to the Building Materials Evaluation Commission is,
- (a) \$5,000, for 2015,
  - (b) \$7,000, for 2016,
  - (c) \$9,000, for 2017, and
  - (d) \$11,000, for 2018 and subsequent calendar years.

## Section 2.4. Rulings and Interpretations

### r<sub>2</sub> 2.4.1. Minister's Rulings — Innovative Materials, Systems or Building Designs

#### r<sub>2</sub> 2.4.1.1. Designated Materials Evaluation Bodies

- (1) The following body is designated as a materials evaluation body for the purposes of clause 29(1)(a) of the Act: Canadian Construction Materials Centre of the National Research Council of Canada.

#### r<sub>2</sub> 2.4.1.2. Fee

- (1) The fee on a request for a ruling under clause 29(1)(a) of the Act is,
- (a) \$560, for 2014, and
  - (b) the amount determined in accordance with Sentences (2) and (3) rounded to the nearest dollar, for 2015 and subsequent calendar years.
- (2) On and after January 1, 2015, the fee for a calendar year is the fee for the previous calendar year adjusted by the percentage change from year to year in the Consumer Price Index for Ontario (All-Items) as reported monthly by Statistics Canada under the authority of the *Statistics Act* (Canada), averaged over the 12-month period that ends on March 31 of the previous calendar year, rounded to the first decimal point.
- (3) Despite Sentence (2), if the percentage change results in a negative amount, the fee for a calendar year shall remain at the same level as the previous calendar year.

### r<sub>2</sub> 2.4.2. Minister's Rulings — Alternative Materials, Systems or Building Designs

#### 2.4.2.1. Criteria

- (1) Sentence (2) sets out criteria to be followed by the *Minister* when making a ruling under clause 29(1)(c) of the Act to approve the use of an alternative material, system or *building* design.

- (2) The *Minister's* approval of the use of an alternative material, system or *building* design referred to in Sentence (1) may be granted only if the approval is consistent with,
- (a) a decision of the Building Code Commission in respect of a dispute described in clause 24(1)(a) of the Act,
  - (b) an approval of the use of the material, system or *building* design in the whole of another province or territory in accordance with the law of that province or territory, or
  - (c) a revision of the CCBFC NRCC 53301, “National Building Code of Canada”, or the CCBFC NRCC 53302, “National Plumbing Code of Canada”, that has been approved by the Canadian Commission on Building and Fire Codes.

## 2.4.3. Interpretations By Minister

### 2.4.3.1. Interpretations By Minister

- (1) Every interpretation issued by the *Minister* under section 28.1 of the Act shall be made available to the public,
- (a) by posting the interpretation on the *Building Code website*, and
  - (b) by providing a written copy of the interpretation on receipt of a request for it.

**e<sub>3</sub> Part 3**

# Qualifications

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## Part 3

# Qualifications

### r2.1 Section 3.1. Qualifications for Chief Building Officials and Inspectors

#### 3.1.1. Scope and Definition

##### 3.1.1.1. Scope

- (1) Except as provided in Sentence (2), this Section prescribes, for the purposes of subsections 15.11(1), (2) and (3) of the Act,
- (a) the qualifications that a person must satisfy to be appointed and to remain appointed as,
    - (i) a *chief building official* under the Act, or
    - (ii) an *inspector* who has the same powers and duties as a *chief building official* in relation to *plumbing*,
  - (b) the qualifications that a person must satisfy to be appointed and to remain appointed as,
    - (i) an *inspector* who has the same powers and duties as a *chief building official* in relation to *sewage systems*, or
    - (ii) an *inspector* whose duties include plans review or inspection of *sewage systems* under the Act, and
  - (c) the qualifications that a person must satisfy to be appointed and to remain appointed as an *inspector* under the Act, other than an *inspector* described in Subclause (a)(ii) or (b)(i) or (ii).
- (2) The qualification requirements for *chief building officials* and *inspectors* in Sentence (1) do not apply to plans review and inspection of,
- (a) site services including,
    - (i) surface drainage, and
    - (ii) *plumbing* located underground either outside a *building* or under a *building*,
  - (b) *construction* of a factory-built house certified to CSA A277, “Procedure for Factory Certification of Buildings”,
  - (c) *construction* of a mobile home conforming to CSA Z240 MH Series, “Manufactured Homes”,
  - (d) *construction* of a park model trailer conforming to CAN/CSA-Z241 Series, “Park Model Trailers”, or
  - (e) signs.

##### 3.1.1.2. Definition

- (1) In this Section,
- “registered” means registered under Sentence 3.1.2.2.(1), 3.1.3.2.(1) or 3.1.4.2.(1), as applicable.

#### 3.1.2. Chief Building Officials

##### 3.1.2.1. Qualifications

- (1) The following are prescribed as qualifications for a person to be appointed and to remain appointed under the Act as a *chief building official* or as an *inspector* who has the same powers and duties as a *chief building official* in relation to *sewage systems* or *plumbing*:
- (a) the person must be registered with the *director*.

- (2) A registration shall be in a form established by the *director*.
- (3) A person who was qualified on December 31, 2014 under Sentence 3.1.2.1.(1), as it read on that date, is deemed to have the qualification set out in Sentence (1) until the earlier of,
  - (a) the day the person is registered under Sentence 3.1.2.2.(1), and
  - (b) March 31, 2015.

### 3.1.2.2. Registration and Renewal of a Registration

- (1) Subject to Article 3.1.5.7., the *director* may register an applicant, or renew a registration, if,
  - (a) the applicant or registered person has successfully completed the examination program administered or authorized by the Ministry of Municipal Affairs and Housing relating to the person's knowledge of the Act and this Code and the powers and duties of *chief building officials*,
  - (b) the applicant or registered person also has the qualification set out in Sentence 3.1.4.1.(1), in the case of an applicant or registered person who, under subsection 22(2) of the Act, will also exercise any of the powers or perform any of the duties of an *inspector*,
  - (c) the application is complete, and
  - (d) all fees required under Article 3.1.5.3. are paid.
- (2) For the purposes of a registration or a renewal of a registration, a person who was qualified on December 31, 2014 under Sentence 3.1.2.1.(1), as it read on that date, is deemed to have the qualifications set out in Clause (1)(a).
- (3) If a person is given notice of a knowledge maintenance examination either after December 31, 2014 under Sentence 3.1.5.6.(1) or, on or before December 31, 2014, under Sentence 3.1.5.1.(2), as it read on that date, and does not successfully complete the knowledge maintenance examination referred in the notice by the end of the eighteenth month following the month in which the *director* gives notice of the knowledge maintenance examination to the person, Sentence (2) ceases to apply to the person at the end of that period.

## 3.1.3. Supervisors and Managers

### 3.1.3.1. Qualifications

- (1) The following are prescribed as qualifications for a person to be appointed and to remain appointed under the Act as an *inspector* whose duties are solely the supervision or management of *inspectors*:
  - (a) the person must be registered with the *director*.
- (2) A registration shall be in a form established by the *director*.
- (3) A person who was qualified on December 31, 2014 under Sentence 3.1.3.1.(1), as it read on that date, is deemed to have the qualification set out in Sentence (1) until the earlier of,
  - (a) the day the person is registered under Sentence 3.1.3.2.(1), and
  - (b) March 31, 2015.

### 3.1.3.2. Registration and Renewal of a Registration

- (1) Subject to Article 3.1.5.7., the *director* may register an applicant, or renew a registration, if,
  - (a) the applicant or registered person has successfully completed the examination program administered or authorized by the Ministry of Municipal Affairs and Housing relating to the person's knowledge of the Act and this Code and the powers and duties of *chief building officials*,
  - (b) the applicant or registered person has successfully completed the examination program administered or authorized by the Ministry of Municipal Affairs and Housing relating to the person's knowledge of the Act and this Code in any one category of qualification set out in Column 2 of Table 3.5.2.1.,
  - (c) the application is complete, and
  - (d) all fees required under Article 3.1.5.3. are paid.

(2) For the purposes of a registration or a renewal of a registration, a person who was qualified on December 31, 2014 under Sentence 3.1.3.1.(1), as it read on that date, is deemed to have the qualifications set out in Clauses (1)(a) and (b).

(3) If a person is given notice of a knowledge maintenance examination that relates to the subject matter of an examination program referred to in Clause (1)(a) or (b), as applicable, either after December 31, 2014 under Sentence 3.1.5.6.(1) or, on or before December 31, 2014, under Sentence 3.1.5.1.(2), as it read on that date, and does not successfully complete the knowledge maintenance examination referred in the notice by the end of the eighteenth month following the month in which the *director* gives notice of the knowledge maintenance examination to the person, Sentence (2) ceases to apply to the person at the end of that period with respect to the qualifications set out in Clause (1)(a) or (b), as applicable.

## 3.1.4. Inspectors

### 3.1.4.1. Qualifications

(1) Except as provided in Article 3.1.4.3. or 3.1.4.4., the following are prescribed as qualifications for a person to be appointed and to remain appointed under the Act as an *inspector* whose duties include plans review or inspection under the Act:

(a) the person must be registered with the *director*.

(2) A registration shall be in a form established by the *director*.

(3) A person who was qualified on December 31, 2014 under Sentence 3.1.4.1.(1) in a category of qualification set out in Column 2 of Table 3.5.2.1., as they read on that date, is deemed to be registered in the class of registration that corresponds to that category of qualification until the earlier of,

- (a) the day the person is registered in that class of registration under Sentence 3.1.4.2.(1), and
- (b) March 31, 2015.

### 3.1.4.2. Registration and Renewal of a Registration

(1) Subject to Article 3.1.5.7., the *director* may register an applicant, or renew a registration, in each class of registration applied for, if,

- (a) the applicant or registered person has successfully completed the examination program administered or authorized by the Ministry of Municipal Affairs and Housing relating to the person's knowledge of the Act and this Code in the category of qualification set out in Column 2 of Table 3.5.2.1. that corresponds to each class of registration set out in Column 1 of Table 3.5.2.1. for which application is made,
- (b) the application is complete, and
- (c) all fees required under Article 3.1.5.3. are paid.

(2) For the purposes of a registration or a renewal of a registration in a class of registration, a person who was qualified on December 31, 2014 under Sentence 3.1.4.1.(1) in a category of qualification set out in Column 2 of Table 3.5.2.1., as they read on that date, is deemed to have the qualifications set out in Clause (1)(a) in that category of qualification.

(3) If a person is given notice of a knowledge maintenance examination that relates to the subject matter of an examination program in the category of qualification either after December 31, 2014 under Sentence 3.1.5.6.(1) or, on or before December 31, 2014, under Sentence 3.1.5.1.(2), as it read on that date, and does not successfully complete the knowledge maintenance examination referred in the notice by the end of the eighteenth month following the month in which the *director* gives notice of the knowledge maintenance examination to the person, Sentence (2) ceases to apply to the person at the end of that period.

### 3.1.4.3. Qualifications for Intern Inspectors

- (1) A person may be appointed or remain appointed under the Act as an intern *inspector* whose duties include supervised plans review or inspection under the Act, even if the person does not have the qualification set out in Article 3.1.4.1., provided the person is enrolled in an internship program approved by the *Minister*.
- (2) An intern *inspector* who is exempt under Sentence (1) shall be supervised by an *inspector* or *chief building official* who is registered in the class of registration in respect of which the intern *inspector* will exercise the powers or perform the duties.
- (3) An intern *inspector* who is exempt under Sentence (1) shall not,
- (a) issue orders under the Act except orders under subsection 12(2) or 13(1) of the Act, or
  - (b) undertake a site inspection of a *building* related to a notice in respect of,
    - (i) substantial completion of footings and *foundations* prior to commencement of backfilling, or
    - (ii) completion of *construction* and installation of components required to permit the issuance of an occupancy permit under Sentence 1.3.3.1.(3), 1.3.3.4.(4) or 1.3.3.5.(3) or to permit occupancy under Sentence 1.3.3.2.(1), if the *building* or part of the *building* to be occupied is not fully completed.

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### 3.1.4.4. Qualifications for Maintenance Program Inspectors

- (1) A person may be appointed or remain appointed under the Act as an *inspector* whose duties include *maintenance inspections* of *sewage systems*, even if the person does not have the qualification set out in Article 3.1.4.1. in respect of these duties.
- (2) An *inspector* who is exempt under Sentence (1) is authorized to conduct *maintenance inspections* of *sewage systems* only if the following conditions are met:
- (a) the person is supervised by an *inspector* or *chief building official* who is registered in the class of registration described in Column 1 of Item 10 of Table 3.5.2.1., and
  - (b) the person does not issue orders under the Act.

## 3.1.5. Qualifications — Chief Building Officials, Supervisors and Managers, and Inspectors

### 3.1.5.1. Application for Registration or Renewal of a Registration

- (1) An application for registration or renewal of a registration shall be made to the *director* in a form established by the *director*.
- (2) An application for renewal of a registration shall be made at least 60 days before the expiry of the registration to be renewed.
- (3) An application for registration or renewal of a registration shall include an undertaking by the applicant or registered person to comply with the conditions set out in Article 3.1.5.5.
- (4) An application for registration or renewal of a registration shall,
- (a) set out the applicant's or registered person's name, residence address, residential mailing address, if different from the residence address, and email address, if applicable,
  - (b) set out the name and address of every *principal authority* that has appointed the person as a *chief building official* or *inspector* under the Act, and
  - (c) contain evidence, provided by the applicant or registered person, that the applicant or registered person has the qualifications set out in Clauses 3.1.2.2.(1)(a) and (b), 3.1.3.2.(1)(a) and (b), or 3.1.4.2.(1)(a), as applicable.

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### 3.1.5.2. Term

(1) A registration expires one year after it is issued but the *director* may, for the purposes of staggering the renewal dates of the registrations, issue the initial registration for a term of not less than 90 days and not more than 18 months.

### 3.1.5.3. Fees

(1) The fee payable for an application to take an examination that is part of an examination program referred to in Clause 3.1.2.2.(1)(a), 3.1.3.2.(1)(a) or (b) or 3.1.4.2.(1)(a) is \$150.

(2) The fee for a registration or renewal of a registration is,

(a) \$105, for 2015, and

(b) the amount determined in accordance with Sentences (3) and (4) rounded to the nearest dollar, for 2016 and subsequent calendar years.

(3) On and after January 1, 2016, the fee for a calendar year is the fee for the previous calendar year adjusted by the percentage change from year to year in the Consumer Price Index for Ontario (All-Items) as reported monthly by Statistics Canada under the authority of the *Statistics Act* (Canada), averaged over the 12-month period that ends on March 31 of the previous calendar year, rounded to the first decimal point.

(4) Despite Sentence (3), if the percentage change results in a negative amount, the fee for a calendar year shall remain at the same level as the previous calendar year.

### 3.1.5.4. Not Transferable

(1) A registration is not transferable.

### 3.1.5.5. Conditions

(1) The following are the conditions of a registration:

(a) the registered person shall, within 15 days after the event, notify the *director* in writing of any change in the information set out in Clause 3.1.5.1.(4)(a) or (b),

(b) in the case of a registered person who is given notice of a knowledge maintenance examination under Sentence 3.1.5.6.(1), the person shall successfully complete the knowledge maintenance examination referred to in the notice by the end of the eighteenth month following the month in which the *director* gives notice of the knowledge maintenance examination to the person, and

(c) in the case of an *inspector* registered under Sentence 3.1.4.2.(1), the person shall exercise his or her powers and perform his or her duties only in respect of the type of *buildings* described in Column 3 of Table 3.5.2.1. that correspond to the class or classes of registration held by the person.

### 3.1.5.6. Knowledge Maintenance

(1) The *director* shall give notice of a knowledge maintenance examination administered or authorized by the Ministry of Municipal Affairs and Housing in respect of changes described in Sentence (2) that relate to the subject matter of an examination program referred to in Clause 3.1.2.2.(1)(a), 3.1.3.2.(1)(a) or (b) or 3.1.4.2.(1)(a), as applicable, to every person who, on December 31, 2013, has the qualifications set out in Sentence 3.1.2.1.(1), 3.1.3.1.(1) or 3.1.4.1.(1), as applicable, of Division C of Ontario Regulation 350/06 (Building Code) made under the Act.

(2) The changes referred to in Sentence (1) are changes made to the Act and Ontario Regulation 350/06 from December 31, 2006 to December 31, 2013 and changes made at the time that regulation is replaced by this Code on January 1, 2014.

- r<sub>5</sub> (3) The *director* may give the notice referred to in Sentence (1) by sending it,
- (a) by regular mail to the last address of the person that has been filed with the *director*, or
  - (b) by email to the last email address of the person that has been filed with the *director*.

### 3.1.5.7. Suspension, Revocation, Refusal to Register or Renew a Registration

- (1) The *director* may, in the circumstances set out in Sentence (2),
  - (a) refuse to register an applicant or to renew a registration, or
  - (b) suspend or revoke a registration.
- (2) The circumstances referred to in Sentence (1) are,
  - (a) the registered person is in breach of a condition of the registration,
  - (b) the registration was issued on the basis of mistaken, false or incorrect information,
  - (c) an order under subsection 69(2) of the *Provincial Offences Act* is in effect directing that the registration of the person be suspended and that no registration be issued to that person until a fine is paid,
  - (d) the application is incomplete, or
  - (e) any fees required under Article 3.1.5.3. remain unpaid.
- (3) If the *director* proposes to refuse to register or renew a registration or proposes to suspend or revoke a registration, the *director* shall serve a notice of the proposal, together with the reasons for it, on the applicant or registered person.
- (4) A notice under Sentence (3) shall state that the applicant or registered person is entitled to a hearing before the *Tribunal* if the applicant or registered person, within 15 days after service of the notice referred to in Sentence (3), serves the *director* and the *Tribunal* with notice in writing requesting a hearing.
- (5) If the applicant or registered person does not request a hearing by the *Tribunal* in accordance with Sentence (4), the *director* may carry out the proposal stated in the notice under Sentence (3).
- (6) If the applicant or registered person requests a hearing before the *Tribunal* in accordance with Sentence (4), the *Tribunal* shall appoint a time for and hold a hearing and may by order direct the *director* to carry out the *director's* proposal or refrain from carrying it out and to take such other action as the *Tribunal* considers the *director* ought to take in accordance with the Act and this Code, and for those purposes, the *Tribunal* may substitute its opinion for that of the *director*.
- (7) The *director*, the applicant or registered person who requested the hearing, and such other persons as the *Tribunal* may specify, are parties to proceedings before the *Tribunal*.
- (8) Sentences (3) to (7) do not apply and the *director* may cancel the registration of a registered person upon receipt of a request in writing for cancellation from the registered person in a form established by the *director*.
- (9) If, within the time period set out in Sentence 3.1.5.1.(2), the registered person has applied for renewal of a registration and paid the fee required under Article 3.1.5.3., the registration is deemed to continue until the earlier of,
  - (a) the day the registration is renewed, and
  - (b) if the registered person is served with notice that the *director* proposes to refuse to renew the registration, the day the time for giving notice requesting a hearing expires or, if a hearing is held, the day the *Tribunal* makes its order.

## 3.1.6. Public Register

### 3.1.6.1. Public Register

- (1) The *director* shall establish and maintain a register available to the public that lists every person who has the qualifications required by subsections 15.11(1), (2) and (3) of the Act and has been appointed as a *chief building official* or *inspector* by a *principal authority*.

- r<sub>2</sub> (d) by the end of the eighteenth month following the month in which the *director* gives notice of a knowledge maintenance examination to the registered person under Sentence 3.2.4.8.(1), the registered person shall ensure that the following persons have successfully completed the knowledge maintenance examination referred to in the notice:
- (i) the registered person and the persons described in Clause (b) who are deemed under Sentence 3.2.4.2.(3) to have the qualifications set out in Clause 3.2.4.2.(1)(a) in the class of registration to which the notice relates, and
  - (ii) persons described in Clause (c) who are deemed under Sentence 3.2.4.2.(3) to have the qualifications set out in Clause 3.2.4.2.(1)(b) in respect of the class of registration to which the notice relates and who will review and take responsibility for *design activities* provided to the public by the registered person in the class of registration,
- (e) the registered person shall ensure that a person described in Clause (c) who reviews and takes responsibility for *design activities* provided to the public by the registered person shall include the following information on any document submitted to a *chief building official* or *registered code agency* in the circumstances set out in subsection 15.11(5) of the Act:
- (i) the name of the registered person and any registration number issued to the registered person by the *director*,
  - (ii) a statement that the person has reviewed and taken responsibility for the *design activities*,
  - (iii) the person's name and any identifying number issued to the person by the *director* in respect of the qualifications described in Clause 3.2.4.2.(1)(a) or (b) that the person has, and
  - (iv) the person's signature,
- (f) the registered person shall, during the term of the registration, be covered by the insurance required under Subsection 3.6.2.,
- (g) the registered person shall, within 15 days after the event, notify the *director* in writing of,
- (i) any change in address of the registered person for correspondence relating to the registration, and
  - (ii) any change in the information set out in Sentences 3.2.4.3.(4) and (5),
- (h) the registered person shall give prompt written notice to the *director* of any material change in any of the information, other than the information referred to in Clause (g), that is contained in or accompanies an application for registration or renewal of a registration,
- (i) the registered person shall, from time to time, at the registered person's expense, give the *director* such documents or information relating to the registration or to activities carried out under the registration as the *director* may reasonably require, and
- (j) the registered person shall allow the representatives of the *director* access to the registered person's books and records during normal business hours for the purpose of confirming matters related to the registration.

### 3.2.4.8. Knowledge Maintenance

(1) The *director* shall give notice of a knowledge maintenance examination administered or authorized by the Ministry of Municipal Affairs and Housing in respect of changes described in Sentence (2) that relate to the subject matter of an examination program referred to in Clause 3.2.4.2.(1)(a) or (b) to every person who is registered under Sentence 3.2.4.2.(1) in a class of registration to which the knowledge maintenance examination relates.

- r<sub>3</sub> (2) The changes referred to in Sentence (1) are changes made to the Act and Ontario Regulation 350/06 (Building Code) from December 31, 2006 to December 31, 2013 and changes made at the time that regulation is replaced by this Code on January 1, 2014.
- r<sub>5</sub> (3) The *director* may give the notice referred to in Sentence (1) by sending it,
- (a) by regular mail to the last address of the person that has been filed with the *director*, or
  - (b) by email to the last email address of the person that has been filed with the *director*.

### 3.2.4.9. Suspension, Revocation, Refusal to Register or Renew a Registration

- (1) The *director* may, in the circumstances set out in Sentence (2),
- (a) refuse to register an applicant or to renew a registration, or
  - (b) suspend or revoke a registration.

- (2) The circumstances referred to in Sentence (1) are,
  - (a) the registered person is in contravention of the Act or this Code,
  - (b) the registered person is in breach of a condition of the registration other than the condition set out in Clause 3.2.4.7.(1)(f),
  - (c) the registration was issued on the basis of mistaken, false or incorrect information,
  - (d) the *director* is of the opinion that the past conduct of the applicant or registered person or, if the applicant or registered person is a partnership or a corporation, the partners, officers or directors of the applicant or registered person, as the case may be, affords reasonable grounds for belief that the business that would be or is authorized by the registration will not be carried on in accordance with law,
  - (e) the application is incomplete, or
  - (f) any fees required under Article 3.2.4.5. remain unpaid.
- (3) If the *director* proposes to refuse to register or renew a registration or proposes to suspend or revoke a registration under Sentence (1), the *director* shall serve a notice of the proposal, together with the reasons for it, on the applicant or registered person.
- (4) A notice under Sentence (3) shall state that the applicant or registered person is entitled to a hearing before the *Tribunal* if the applicant or registered person, within 15 days after service of the notice referred to in Sentence (3), serves the *director* and the *Tribunal* with notice in writing requesting a hearing.
- (5) If the applicant or registered person does not request a hearing by the *Tribunal* in accordance with Sentence (4), the *director* may carry out the proposal stated in the notice under Sentence (3).
- (6) If the applicant or registered person requests a hearing before the *Tribunal* in accordance with Sentence (4), the *Tribunal* shall appoint a time for and hold a hearing and may by order direct the *director* to carry out the *director's* proposal or refrain from carrying it out and to take such other action as the *Tribunal* considers the *director* ought to take in accordance with the Act and this Code, and for those purposes the *Tribunal* may substitute its opinion for that of the *director*.
- (7) The *director*, the applicant or registered person who requested the hearing, and such other persons as the *Tribunal* may specify, are parties to proceedings before the *Tribunal*.
- (8) Sentences (3) to (7) do not apply and the *director* may cancel the registration of a registered person upon receipt of a request in writing for cancellation from the registered person in a form established by the *director*.
- (9) If, within the time period set out in Sentence 3.2.4.3.(2), the registered person has applied for renewal of a registration, paid the fee required under Article 3.2.4.5. and provided evidence satisfactory to the *director* that the registered person is covered by insurance required under Subsection 3.6.2. for the term of the renewal of the registration, the registration is deemed to continue until the earliest of,
  - (a) the day the registration is renewed,
  - (b) if the registered person is served with notice that the *director* proposes to refuse to renew the registration, the day the time for giving notice requesting a hearing expires or, if a hearing is held, the day the *Tribunal* makes its order, and
  - (c) the day when the registered person ceases to be covered by the insurance required under Subsection 3.6.2.

### **3.2.4.10. Mandatory Suspension or Revocation of Registration or Refusal to Register or Renew Registration**

- (1) The *director* shall, in the circumstances set out in Sentence (2),
  - (a) refuse to register an applicant,
  - (b) refuse to renew a registration, or
  - (c) suspend or revoke a registration.



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- (4) An application for registration or renewal of a registration shall,
  - (a) set out the applicant's or registered person's name, residence address, residential mailing address, if different from the residence address, and email address, if applicable, and
  - (b) contain evidence, provided by the applicant or registered person, that the applicant or registered person has the qualifications set out in Clause 3.2.5.2.(1)(a).

#### 3.2.5.4. Term

- (1) A registration expires one year after it is issued but the *director* may, for the purposes of staggering the renewal dates of the registrations, issue the initial registration for a term of not less than 90 days and not more than 18 months.

#### 3.2.5.5. Fees

- (1) The fee payable for an application to take an examination that is part of an examination program referred to in Clause 3.2.5.2.(1)(a) is \$150.
- (2) The fee for a registration or renewal of a registration is,
  - (a) \$105, for 2015, and
  - (b) the amount determined in accordance with Sentences (3) and (4) rounded to the nearest dollar, for 2016 and subsequent calendar years.
- (3) On and after January 1, 2016, the fee for a calendar year is the fee for the previous calendar year adjusted by the percentage change from year to year in the Consumer Price Index for Ontario (All-Items) as reported monthly by Statistics Canada under the authority of the *Statistics Act* (Canada), averaged over the 12-month period that ends on March 31 of the previous calendar year, rounded to the first decimal point.
- (4) Despite Sentence (3), if the percentage change results in a negative amount, the fee for a calendar year shall remain at the same level as the previous calendar year.

#### 3.2.5.6. Conditions

- (1) The following are the conditions of a registration:
  - (a) the registered person shall carry out *design activities* only in respect of the type of *buildings* described in Column 3 of Table 3.5.2.1. that correspond to the class or classes of registration held by the registered person,
  - (b) in the case of a registered person who is given notice of a knowledge maintenance examination under Sentence 3.2.5.7.(1), the person shall successfully complete the knowledge maintenance examination referred to in the notice by the end of the eighteenth month following the month in which the *director* gives notice of the knowledge maintenance examination to the person,
  - (c) the registered person shall, within 15 days after the event, notify the *director* in writing of any change in the information set out in Clause 3.2.5.3.(4)(a),
  - (d) the registered person shall include the following information on any document respecting *design activities* that the person has reviewed and taken responsibility for and that is submitted to a *chief building official* or *registered code agency* in the circumstances set out in subsection 15.11(5) of the Act:
    - (i) the person's name and any identifying number assigned to the person by the *director* in respect of the person's registration,
    - (ii) a statement that the person has reviewed and taken responsibility for the *design activities*, and
    - (iii) the person's signature.

### 3.2.5.7. Knowledge Maintenance

(1) The *director* shall give notice of a knowledge maintenance examination administered or authorized by the Ministry of Municipal Affairs and Housing in respect of changes described in Sentence (2) that relate to the subject matter of an examination program referred to in Clause 3.2.5.2.(1)(a) to every person who, on December 31, 2013, has the qualifications set out in Clauses 3.2.5.1.(1)(a) and (b) of Division C of Ontario Regulation 350/06 (Building Code) made under the Act.

(2) The changes referred to in Sentence (1) are changes made to the Act and Ontario Regulation 350/06 from December 31, 2006 to December 31, 2013 and changes made at the time that regulation is replaced by this Code on January 1, 2014.

- r<sub>5</sub>
- (3) The *director* may give the notice referred to in Sentence (1) by sending it,
- (a) by regular mail to the last address of the person that has been filed with the *director*, or
  - (b) by email to the last email address of the person that has been filed with the *director*.

### 3.2.5.8. Suspension, Revocation, Refusal to Register or Renew a Registration

(1) The *director* may, in the circumstances set out in Sentence (2),

- (a) refuse to register an applicant or to renew a registration, or
- (b) suspend or revoke a registration.

(2) The circumstances referred to in Sentence (1) are,

- (a) the registered person is in breach of a condition of the registration,
- (b) the registration was issued on the basis of mistaken, false or incorrect information,
- (c) an order under subsection 69(2) of the *Provincial Offences Act* is in effect directing that the registration of the person be suspended and that no registration be issued to that person until a fine is paid,
- (d) the application is incomplete, or
- (e) any fees required under Article 3.2.5.5. remain unpaid.

(3) If the *director* proposes to refuse to register or renew a registration or proposes to suspend or revoke a registration, the *director* shall serve a notice of the proposal, together with the reasons for it, on the applicant or registered person.

(4) A notice under Sentence (3) shall state that the applicant or registered person is entitled to a hearing before the *Tribunal* if the applicant or registered person, within 15 days after service of the notice referred to in Sentence (3), serves the *director* and the *Tribunal* with notice in writing requesting a hearing.

(5) If the applicant or registered person does not request a hearing by the *Tribunal* in accordance with Sentence (4), the *director* may carry out the proposal stated in the notice under Sentence (3).

(6) If the applicant or registered person requests a hearing before the *Tribunal* in accordance with Sentence (4), the *Tribunal* shall appoint a time for and hold a hearing and may by order direct the *director* to carry out the *director's* proposal or refrain from carrying it out and to take such other action as the *Tribunal* considers the *director* ought to take in accordance with the Act and this Code, and for those purposes, the *Tribunal* may substitute its opinion for that of the *director*.

(7) The *director*, the applicant or registered person who requested the hearing, and such other persons as the *Tribunal* may specify, are parties to proceedings before the *Tribunal*.

### 3.3.3.8. Knowledge Maintenance

- (1) The *director* shall give notice of a knowledge maintenance examination administered or authorized by the Ministry of Municipal Affairs and Housing in respect of changes described in Sentence (2) that relate to the subject matter of an examination program referred to in Clause 3.3.3.2.(1)(a) to every person who is registered under Sentence 3.3.3.2.(1).
- r<sub>3</sub> (2) The changes referred to in Sentence (1) are changes made to the Act and Ontario Regulation 350/06 (Building Code) from December 31, 2006 to December 31, 2013 and changes made at the time that regulation is replaced by this Code on January 1, 2014.
- r<sub>5</sub> (3) The *director* may give the notice referred to in Sentence (1) by sending it,
- (a) by regular mail to the last address of the person that has been filed with the *director*, or
  - (b) by email to the last email address of the person that has been filed with the *director*.

### 3.3.3.9. Suspension, Revocation, Refusal to Register or Renew a Registration

- (1) The *director* may, in the circumstances set out in Sentence (2),
- (a) refuse to register an applicant or to renew a registration, or
  - (b) suspend or revoke a registration.
- (2) The circumstances referred to in Sentence (1) are,
- (a) the registered person is in contravention of the Act or this Code,
  - (b) the registered person is in breach of a condition of the registration,
  - (c) the registration was issued on the basis of mistaken, false or incorrect information,
- (d) the *director* is of the opinion that the past conduct of the applicant or registered person or, if the applicant or registered person is a partnership or a corporation, the partners, officers or directors of the applicant or registered person, as the case may be, affords reasonable grounds for belief that the business that would be or is authorized by the registration will not be carried on in accordance with law,
- (e) an order under subsection 69(2) of the *Provincial Offences Act* is in effect directing that the registration of the person be suspended and that no registration be issued to that person until a fine is paid,
- (f) the application is incomplete, or
- (g) any fees required under Article 3.3.3.5. remain unpaid.
- (3) If the *director* proposes to refuse to register or renew a registration or proposes to suspend or revoke a registration, the *director* shall serve a notice of the proposal, together with the reasons for it, on the applicant or registered person.
- (4) A notice under Sentence (3) shall state that the applicant or registered person is entitled to a hearing before the *Tribunal* if the applicant or registered person, within 15 days after service of the notice referred to in Sentence (3), serves the *director* and the *Tribunal* with notice in writing requesting a hearing.
- (5) If the applicant or registered person does not request a hearing by the *Tribunal* in accordance with Sentence (4), the *director* may carry out the proposal stated in the notice under Sentence (3).

- (6) If the applicant or registered person requests a hearing before the *Tribunal* in accordance with Sentence (4), the *Tribunal* shall appoint a time for and hold a hearing and may by order direct the *director* to carry out the *director's* proposal or refrain from carrying it out and to take such other action as the *Tribunal* considers the *director* ought to take in accordance with the Act and this Code, and for those purposes the *Tribunal* may substitute its opinion for that of the *director*.
- (7) The *director*, the applicant or registered person who requested the hearing, and such other persons as the *Tribunal* may specify, are parties to proceedings before the *Tribunal*.
- (8) Sentences (3) to (7) do not apply and the *director* may cancel the registration of a registered person upon receipt of a request in writing for cancellation from the registered person in a form established by the *director*.
- (9) If, within the time period set out in Sentence 3.3.3.3.(2), the registered person has applied for renewal of a registration and paid the fee required under Article 3.3.3.5., the registration is deemed to continue until the earlier of,
- the day the registration is renewed, and
  - if the registered person is served with notice that the *director* proposes to refuse to renew the registration, the day the time for giving notice requesting a hearing expires or, if a hearing is held, the day the *Tribunal* makes its order.

### 3.3.4. Public Register

#### 3.3.4.1. Public Register

- (1) The *director* shall establish and maintain a register available to the public that lists every person who has the qualifications required by subsection 15.12(1) of the Act.
- (2) The register referred to in Sentence (1) shall contain the following information with respect to every registered person:
- the name of the registered person,
  - any identifying number assigned by the *director* to the registered person,
  - the business address of the registered person,
  - the names of the person or persons who will supervise the *construction* on site, installation, repair, servicing, cleaning or emptying of *sewage systems* carried out by the registered person, and
  - any identifying number assigned by the *director* to the person or persons referred to in Clause (d).

(4) An application for registration or renewal of a registration shall include an undertaking by the applicant or registered person to comply with the conditions set out in Article 3.4.3.7.

(5) If a partnership or a corporation is the applicant for registration or renewal of a registration, the application shall set out the names and residence addresses of all its partners, directors or officers, as the case may be.

(6) An application for registration or renewal of a registration shall contain the names of all partners, directors, officers or employees of the applicant or registered person, as the case may be, and all other persons engaged by the applicant or registered person, who,

(a) have the qualifications set out in Clause 3.4.3.2.(1)(a),

(b) have the qualifications set out in Clause 3.4.3.2.(1)(b) in the class or classes of registration for which the application is made, and

(c) have the qualifications set out in Clause 3.4.3.2.(1)(c) in the class or classes of registration for which the application is made and will exercise powers and perform functions under the Act on behalf of the applicant or registered person in that class of registration.

(7) An application for registration or renewal of a registration shall contain evidence, provided by the applicant or registered person, that the persons referred to in Sentence (6) have the qualifications set out in Clause 3.4.3.2.(1)(a), (b) or (c).

r<sub>2</sub> (8) An application for registration or renewal of a registration shall contain evidence, provided by the applicant or registered person in such form and in such detail as may be required by the *director*, that the applicant or registered person is covered by the insurance required under Subsection 3.6.2. during the term of the registration applied for.

#### 3.4.3.4. Term

(1) A registration expires one year after the date of its issuance.

#### r<sub>2.1</sub> 3.4.3.5. Fees

(1) The fee payable for an application to take an examination that is part of an examination program referred to in Clause 3.4.3.2.(1)(a), (b) or (c) is \$150.

(2) The fee for a registration is,

(a) \$395, for 2015, and

(b) the amount determined in accordance with Sentences (5) and (6) rounded to the nearest dollar, for 2016 and subsequent calendar years.

(3) The fee for the addition of a new class of registration is,

(a) \$65, for 2015, and

(b) the amount determined in accordance with Sentences (5) and (6) rounded to the nearest dollar, for 2016 and subsequent calendar years.

(4) The fee for renewal of a registration is,

(a) \$290, for 2015, and

(b) the amount determined in accordance with Sentences (5) and (6) rounded to the nearest dollar, for 2016 and subsequent calendar years.

(5) On and after January 1, 2016, the fee for a calendar year is the fee for the previous calendar year adjusted by the percentage change from year to year in the Consumer Price Index for Ontario (All-Items) as reported monthly by Statistics Canada under the authority of the *Statistics Act* (Canada), averaged over the 12-month period that ends on March 31 of the previous calendar year, rounded to the first decimal point.

(6) Despite Sentence (5), if the percentage change results in a negative amount, the fee for a calendar year shall remain at the same level as the previous calendar year.

### 3.4.3.6. Not Transferable

(1) A registration is not transferable.

### 3.4.3.7. Conditions

- (1) The following are the conditions of a registration:
- (a) the registered person shall carry out activities under the registration in accordance with the Act, this Code and the quality management plan described in Clause 3.4.3.2.(1)(d),
  - (b) if the registered person is a corporation or partnership, during the term of the registration there must be,
    - (i) an officer, director, partner or employee of the registered person who has the qualifications set out in Clause 3.4.3.2.(1)(a), and
    - (ii) one or more officers, directors, partners or employees of the registered person who have the qualifications set out in Clause 3.4.3.2.(1)(b) in respect of each class of registration that is held by the registered person,
  - r<sub>2</sub> (c) by the end of the eighteenth month following the month in which the *director* gives notice of a knowledge maintenance examination to the registered person under Sentence 3.4.3.8.(1), the registered person shall ensure that the persons who are deemed under Clause 3.4.3.2.(3)(a) or (b) to have the qualifications set out in Clause 3.4.3.2.(1)(a) or (b), as applicable, have successfully completed the knowledge maintenance examination referred to in the notice,
  - (d) the registered person shall, during the term of the registration, be covered by the insurance required under Subsection 3.6.2.,
  - (e) the registered person shall, within 15 days after the event, notify the *director* in writing of,
    - (i) any change in address of the registered person for correspondence relating to the registration, and
    - (ii) any change in the information set out in Sentences 3.4.3.3.(5) and (6),
  - (f) the registered person shall give prompt written notice to the *director* of any material change in any of the information, other than the information referred to in Clause (e), that is contained in or accompanies an application for registration or renewal of a registration,
  - (g) the registered person shall, from time to time, at the registered person's expense, give to the *director* such documents or information relating to the registration or to activities carried out under the registration as the *director* may reasonably require, and
  - (h) the registered person shall allow the representatives of the *director* access to the registered person's books and records during normal business hours for the purpose of confirming matters related to the registration.

### 3.4.3.8. Knowledge Maintenance

(1) The *director* shall give notice of a knowledge maintenance examination administered or authorized by the Ministry of Municipal Affairs and Housing in respect of changes described in Sentence (2) that relate to the subject matter of an examination program referred to in Clause 3.4.3.2.(1)(a), (b) or (c) to every person who is registered under Sentence 3.4.3.2.(1) in a class of registration set out in Column 1 of Table 3.5.2.2. to which the examination relates.

- r<sub>3</sub> (2) The changes referred to in Sentence (1) are changes made to the Act and Ontario Regulation 350/06 (Building Code) from December 31, 2006 to December 31, 2013 and changes made at the time that regulation is replaced by this Code on January 1, 2014.
- r<sub>5</sub> (3) The *director* may give the notice referred to in Sentence (1) by sending it,
  - (a) by regular mail to the last address of the person that has been filed with the *director*, or
  - (b) by email to the last email address of the person that has been filed with the *director*.

### 3.7.1.2. Appointments

- (1) A *registered code agency* may not be appointed under subsection 4.1(2) of the Act unless the appointment complies with the requirements of Sentences (2) and (3).
- (2) An appointment described in Sentence (1) shall,
  - (a) be made in writing,
  - (b) specify the *construction* of the *building* or class of *buildings* in respect of which the appointment relates,
  - (c) specify the functions described in section 15.15 of the Act that the *registered code agency* is appointed to perform, and
  - (d) require that the *registered code agency* carry out its functions under the appointment in accordance with the Act and this Code and the quality management plan described in Clause 3.4.3.2.(1)(d).
- (3) An appointment described in Sentence (1) may contain provisions in addition to the provisions required under Sentence (2) if the additional provisions are not inconsistent with the provisions required under that Sentence.

## 3.7.2. When a Registered Code Agency may not be Appointed or Continue to Act Under an Appointment

### 3.7.2.1. General

- (1) A *registered code agency* may not be appointed to perform functions under section 15.15 of the Act in respect of a *building* or continue to act under an appointment in respect of a *building* if the *registered code agency*,
  - (a) is not registered under Sentence 3.4.3.2.(1) in respect of the class of registration to which the *construction* of the *building* relates, or
  - (b) is in breach of a condition of its registration under Article 3.4.3.7.
- (2) Where the design and general review of *construction* of a *building* must be undertaken by an *architect* or a *professional engineer* or a combination of both, a *registered code agency* may not be appointed to perform functions under section 15.15 of the Act or continue to act under an appointment in respect of the *construction* of the *building* unless the *registered code agency* or an officer, director, partner or employee of the *registered code agency* is an *architect* or *professional engineer* or both, as the case may be.
  - (3) A *registered code agency* may not be appointed under the Act or continue to act under an appointment if the *registered code agency* would be in a conflict of interest.
  - (4) For the purposes of Sentence (3), a *registered code agency* would be in a conflict of interest if the *registered code agency* or an officer, director, partner or employee of the *registered code agency* or any person engaged by the *registered code agency* to perform functions for it,
    - (a) has participated or participates, in any capacity, in *design activities* or *construction* relating to any part of the *building* to which an appointment relates,
    - (b) is or has been employed within the previous 180 days by a person who carried out *design activities* or *construction* relating to any part of the *building*,
    - (c) has a professional or financial interest in,
      - (i) the *construction* of the *building* to which the appointment relates,
      - (ii) the *building* to which the appointment relates, or
      - (iii) the person responsible for the design of the *building* to which the appointment relates, or
    - (d) is an elected official, officer or employee of a *principal authority*.
  - (5) For the purposes of Clause (4)(c), involvement with a *building* as a *registered code agency* and entitlement to any fee paid for acting as a *registered code agency* in respect of a *building* shall not be considered to be a professional or financial interest in the *construction* of the *building*, the *building* or the person responsible for the design of the *building*.

### 3.7.3. Additional Functions that Registered Code Agencies may be Appointed to Perform

#### 3.7.3.1. General

(1) In addition to the functions described in paragraphs 1 to 5 of section 15.15 of the Act, a *registered code agency* may be appointed to perform the functions set out in Sentence 3.7.4.3.(5) or (6).

### 3.7.4. Manner in Which Registered Code Agency Shall Perform Functions

#### 3.7.4.1. General

(1) The *registered code agency* shall perform the functions specified in an appointment in accordance with the Act and this Code and the quality management plan described in Clause 3.4.3.2.(1)(d).

(2) The *registered code agency* shall perform the functions specified in an appointment in accordance with the code of conduct set out in MMAH Supplementary Standard SC-1, “Code of Conduct for Registered Code Agencies”.

#### 3.7.4.2. Plans Review and Inspection Activities

(1) The *registered code agency* shall ensure that plans review and inspection activities of the *registered code agency* are carried out by a person who has the qualifications set out in Clause 3.4.3.2.(1)(b) or (c) in respect of the type of *building* set out in Column 3 of Table 3.5.2.2. for which the person is carrying out the activities.

r<sub>2</sub> (2) By the end of the eighteenth month following the month in which the *director* gives notice of a knowledge maintenance examination to the *registered code agency* under Sentence 3.4.3.8.(1), the *registered code agency* shall ensure that the persons described in Sentence (1) who are deemed under Clause 3.4.3.2.(3)(b) or (c), as applicable, to have the qualifications set out in Clause 3.4.3.2.(1)(b) or (c), as applicable, in the category of qualification to which the notice relates and who will carry out plans review and inspection activities of the *registered code agency* in that category of qualification, have successfully completed the knowledge maintenance examination referred to in the notice.

(3) A *registered code agency* shall prepare written records of every inspection of the *construction* of a *building* that is undertaken by the *registered code agency* in the course of performing functions under an appointment.

(4) The record required under Sentence (3) shall include,

- (a) the date of receipt of the notice of readiness for inspection, if any,
- (b) the date of the inspection,
- (c) the reason for the inspection, and
- (d) whether non-compliance with this Code was observed in the course of the inspection and the details of the non-compliance.

(5) If a *registered code agency* has issued an order under subsection 12(2), 13(1) or 13(6) of the Act, the *registered code agency* shall prepare a written record consisting of,

- (a) a copy of the order,
- (b) the persons on whom the order was served and the date and manner of service,
- (c) when and how the order was complied with, and
- (d) if the order has not been complied with, the efforts made by the *registered code agency* to achieve compliance by the persons responsible for compliance.



### 3.7.4.3. Issuance of Certificates by Registered Code Agencies

- (1) Subject to Sentence (2), every certificate issued under the Act by a *registered code agency* shall, in accordance with the quality management plan described in Clause 3.4.3.2.(1)(d), be signed by the *registered code agency* or, if the *registered code agency* is a corporation or partnership, by a person who has the qualifications set out in Clause 3.4.3.2.(1)(a).
- r5 (2) If the certificate is issued in respect of the *construction* of a *building* that would be required to be designed by and under the general review of an *architect* or a *professional engineer* or a combination of both, the certificate shall also be signed on behalf of the *registered code agency* by an *architect* or a *professional engineer* or both, as the case may be, who is an officer, director, partner or employee of the *registered code agency*.
- (3) A *registered code agency* may issue a *plans review certificate* if the *registered code agency*,
- (a) has been appointed to perform the functions described in clause 4.1(4)(a) or (c) of the Act in respect of the proposed *construction* of the *building* to which the *plans review certificate* applies,
- (b) has, in conformity with the Act, this Code and the quality management plan described in Clause 3.4.3.2.(1)(d), carried out the applicable functions for which the *registered code agency* was appointed, and
- (c) is satisfied on reasonable grounds that, on date on which the *plans review certificate* is issued, the proposed *construction* of the *building* to which the *plans review certificate* relates is in compliance with this Code.
- (4) A *registered code agency* may issue a *change certificate* if the *registered code agency*,
- (a) has been appointed to perform the functions described in clause 4.1(4)(a), (b) or (c) of the Act in respect of the *construction* or proposed *construction* of the *building* to which the *change certificate* applies,
- (b) has, in conformity with the Act, this Code and the quality management plan described in Clause 3.4.3.2.(1)(d), carried out the applicable functions for which the *registered code agency* was appointed, and
- (c) is satisfied on reasonable grounds that, on the date on which the *change certificate* is issued, the proposed *construction* of the *building* to which the *change certificate* relates is in compliance with this Code.
- (5) A *registered code agency* may issue a *certificate for the occupancy of a building not fully completed* if the *registered code agency*,
- (a) has been appointed to perform the functions described in clause 4.1(4)(b) or (c) of the Act in respect of the *construction* of the *building* to which the *certificate for the occupancy of a building not fully completed* applies,
- (b) has, in conformity with the Act, this Code and the quality management plan described in Clause 3.4.3.2.(1)(d), carried out the applicable functions for which the *registered code agency* was appointed, and
- (c) is satisfied on reasonable grounds that, on the date on which the *certificate for the occupancy of a building not fully completed* is issued, the *construction* of the *building* to which the *certificate for the occupancy of a building not fully completed* relates is in compliance with Clauses 1.3.3.1.(3)(a) to (q).
- (6) A *registered code agency* may issue a *certificate for the occupancy of a building described in Sentence 1.3.3.4.(3) of Division C* if the *registered code agency*,
- (a) has been appointed to perform the functions described in clause 4.1(4)(b) or (c) of the Act in respect of the *construction* of a *building* described in Sentence 1.3.3.4.(3) to which the certificate applies,
- (b) has, in conformity with the Act, this Code and the quality management plan described in Clause 3.4.3.2.(1)(d), carried out the applicable functions for which the *registered code agency* was appointed, and
- r5 (c) is satisfied on reasonable grounds that, on the date on which the *certificate for the occupancy of a building described in Sentence 1.3.3.4.(3) of Division C* is issued, the *construction* of the *building* to which the certificate relates is in compliance with Clauses 1.3.3.4.(4)(a) to (i).
- r5 (7) A *registered code agency* may issue a *certificate for the occupancy of a building described in Sentence 1.3.3.5.(1) of Division C* if the *registered code agency*,
- (a) has been appointed to perform the functions described in clause 4.1 (4)(b) or (c) of the Act in respect of the *construction* of a *building* described in Sentence 1.3.3.5.(1) to which the certificate applies,
- (b) has, in conformity with the Act, this Code and the quality management plan described in Clause 3.4.3.2.(1)(d), carried out the applicable functions for which the *registered code agency* was appointed, and

- (c) is satisfied on reasonable grounds that, on the date on which the *certificate for the occupancy of a building described in Sentence 1.3.3.5.(1) of Division C* is issued, the *construction of the building* to which the certificate relates is in compliance with Clauses 1.3.3.5.(3)(a) to (r).
- r5 (8) A *registered code agency* may issue a *final certificate* if the *registered code agency*,
- (a) has been appointed to perform the functions described in clause 4.1 (4)(b) or (c) of the Act in respect of the *construction of the building* to which the *final certificate* applies,
- (b) has, in conformity with the Act, this Code and the quality management plan described in Clause 3.4.3.2.(1)(d), carried out the applicable functions for which the *registered code agency* was appointed, and
- (c) is satisfied on reasonable grounds that on the date on which the *final certificate* is issued, the *construction of the building* to which the *final certificate* relates is in compliance with this Code.
- r5 (9) Every certificate issued under the Act by a *registered code agency* shall be in a form approved by the *Minister*.

#### 3.7.4.4. Issuance of Orders by Registered Code Agencies

- (1) Orders under subsections 13(6) and 14(1) of the Act shall, in accordance with the quality management plan described in Clause 3.4.3.2.(1)(d), be signed by the *registered code agency* or a person who has the qualifications set out in Clause 3.4.3.2.(1)(a).
- (2) Orders under subsections 12(2) and 13(1) and clause 18(1)(f) of the Act shall, in accordance with the quality management plan described in Clause 3.4.3.2.(1)(d), be signed by the *registered code agency* or by a person who has the qualifications set out in Clause 3.4.3.2.(1)(b) or (c).

#### 3.7.4.5. Authorized Persons

- (1) Persons who have the qualifications set out in Clause 3.4.3.2.(1)(a), (b) or (c) are prescribed for the purposes of subsection 15.17(1) of the Act.
- (2) The certificate of authorization referred to in subsection 15.17(2) of the Act shall, in accordance with the quality management plan described in Clause 3.4.3.2.(1)(d), be signed by a representative of the *registered code agency* who has the qualifications set out in Clause 3.4.3.2.(1)(a) and shall contain the following information:
- (a) the name of the *registered code agency* and any identifying number issued by the *director* to the *registered code agency*,
- (b) the title, business address and business telephone number of a representative of the *registered code agency* who may be contacted to answer questions about the certificate and the authorization to which it relates,
- (c) the name of the authorized person and any identifying number issued by the *director* to the authorized person in respect of that person's qualifications,
- (d) the scope of the powers that may be exercised and the functions that may be performed by the authorized person,
- (e) the date of issuance of the certificate.
- (3) Every person described in Sentence (1) shall carry his or her certificate of authorization when performing duties and shall produce the certificate for inspection upon request.

#### 3.7.4.6. Prohibition

- (1) A *registered code agency* shall not dismiss, suspend, demote, discipline, harass or otherwise disadvantage an employee, or deny an employee a benefit of employment, by reason that,
- (a) the employee, acting in good faith and on the basis of reasonable belief, has disclosed to the *director* that the *registered code agency* or any other person has contravened or intends to contravene a provision of the Act or this Code or a predecessor of this Code,
- (b) the employee, acting in good faith and on the basis of reasonable belief, has refused or stated an intention of refusing to do anything that is a contravention of a provision of the Act or this Code or a predecessor of this Code,

- (c) the employee, acting in good faith and on the basis of reasonable belief, has done or stated an intention of doing anything that is required to be done in order that a provision of the Act or this Code or a predecessor of this Code not be contravened, or
  - (d) the *registered code agency* believes that the employee will do anything referred to in Clause (a), (b) or (c).
- (2) Nothing in this Section impairs any right of an employee either at law or under an employment contract or collective agreement.
- (3) In this Article,  
“employee” includes an independent contractor and “employer” includes the person who retains an employee who is an independent contractor.

### 3.7.4.7. Information and Records

- (1) The *registered code agency* shall maintain records of all plans review and inspection activity, of all certificates and orders and of any other activities taken in carrying out functions under an appointment in accordance with the quality management plan described in Clause 3.4.3.2.(1)(d).
- (2) Any information collected by a *registered code agency* in the course of the exercise of powers and the performance of duties under the Act may be used only for the purpose of performing functions under an appointment under subsection 4.1(2) of the Act and may be disclosed only,
- (a) to a *principal authority* pursuant to an agreement under subsection 4.1(1) of the Act,
  - (b) to a *principal authority* to aid the enforcement in any manner of the Act, or
  - (c) where required or permitted under the Act, this Code, other applicable legislation or an order of a court.
- (3) A *registered code agency* shall ensure that any agreement under which the *registered code agency* engages a person to assist the *registered code agency* to perform functions under an appointment includes a provision that requires the person to comply with Sentences (1) and (2).

### 3.7.5. Termination of Appointment of a Registered Code Agency

#### 3.7.5.1. Termination of an Appointment Made Under Subsection 4.1(2) of the Act

- (1) A *principal authority* may, in accordance with the terms of an agreement under subsection 4.1(1) of the Act, terminate the appointment of a *registered code agency* before the appointment expires under section 15.19 of the Act.

### 3.7.6. Information to be Provided

#### 3.7.6.1. Information to be Provided by a Principal Authority to the Director

- (1) If a *principal authority* that has appointed a *registered code agency* terminates the appointment before the appointment expires under section 15.19 of the Act, the *principal authority* shall, as soon as possible after the termination, give the *director* notice of the termination and such other information concerning the circumstances of the termination and as may be required by the *director*.
- (2) If a *chief building official* has issued an order under subsection 15.21(1) of the Act, the *principal authority* shall as soon as possible after the order is issued give the *director* a copy of the order and such other information concerning the circumstances of the order and as may be required by the *director*.

**3.7.6.2. Information to be Provided by a Registered Code Agency to the Director**

(1) A *registered code agency* that becomes or expects to become unable to carry out the functions for which the *registered code agency* was appointed shall as soon as possible give notice to the *director* of this situation.

**3.7.6.3. Information to be Provided by a Registered Code Agency to the Chief Building Official**

(1) A *registered code agency* shall notify the *chief building official* if the *registered code agency* becomes or expects to become unable to carry out the functions for which the *registered code agency* was appointed.

(2) A *registered code agency* shall give copies of the following records to the *chief building official*,

- (a) all orders issued by the *registered code agency* under subsections 12(2), 13(1) and 13(6) of the Act,
- (b) all written records prepared by the *registered code agency* under Sentences 3.7.4.2.(3), (4) and (5),
- (c) all *final certificates* that are issued by the *registered code agency*,
- (d) records described in Section 2.1. relating to the use of an *alternative solution*, and
- (e) any records of information, copies of documents or things, tests, samples or photographs produced, removed, required, taken or ordered to be taken under subsection 18(1) of the Act.

(3) The documents referred to in Sentence (2) shall be given to the *chief building official*,

- (a) within the time period specified in any agreement under Article 3.7.1.1. or appointment under Article 3.7.1.2. in respect of which the documents relate, whichever time period ends earlier,
- (b) within 15 days after the expiry or termination of the appointment of the *registered code agency* in respect of which the documents relate, if there is no time period specified in the agreement or appointment referred to in Clause (a), or
- (c) if the *chief building official* has given notice to the *registered code agency* that he or she requires the documents before the time set out in Clause (a) or (b), within 2 days after the request for documents.

(4) The requirements of Sentence (2) apply even if the *registered code agency* is no longer registered under Sentence 3.4.3.2.(1).

(5) If a *registered code agency* in the course of carrying out functions under an appointment has reason to believe that a *building* described in Sentence (7) is unsafe within the meaning of subsection 15.9(2) or (3) of the Act, the *registered code agency* shall as soon as possible give notice to the *chief building official* of,

- (a) the location of the *building*, and
- (b) the reason why the *registered code agency* has reason to believe that the *building* is unsafe.

(6) A *registered code agency* that has given a notice to the *chief building official* under Sentence (5) shall give the *chief building official* such other information about the unsafe condition as the *chief building official* may require.

(7) Sentence (5) applies to,

- (a) a *building* in respect of which the *registered code agency* has been appointed to perform functions, and
- (b) a *building* that has been adversely affected by the *construction* of a *building* referred to in Clause (a).

(8) For the purposes of Sentence (3), a time period referred to in Clause (3)(a), (b) or (c),

- (a) does not start until the day after the day on which the obligation to provide the documents arises, and
- (b) does not include Saturdays, holidays and all other days on which the offices of the *principal authority* are not open for the transaction of business with the public.

### 3.7.7. Referral of Stop Work Order

#### 3.7.7.1. Referral

- (1) A *registered code agency* shall refer a matter under subsection 14(5) of the Act to the *chief building official* by giving the *chief building official*, as soon as possible,
  - (a) a report that contains the following information:
    - (i) a copy of the order made under section 12 or 13 of the Act that was not complied with and of the order under section 14 of the Act,
    - (ii) the persons on whom the orders were served and the date and manner of service,
    - (iii) a statement that the orders have not been complied with, and
    - (iv) the efforts made by the *registered code agency* to achieve compliance with the orders by the persons responsible for compliance, and
  - (b) such other information as the *chief building official* may require in respect of the matter that has been referred.
- (2) The report under Clause (1)(a) shall be signed, in accordance with the quality management plan described in Clause 3.4.3.2.(1)(d), by the *registered code agency* or, if the *registered code agency* is a corporation or partnership, by a person who has the qualifications set out in Clause 3.4.3.2.(1)(a).



## Part 4

# Transition, Amendments, Revocation and Commencement

## Section 4.1. Transition Rule

### 4.1.1. Transition, January 2014

#### 4.1.1.1. Transition Rule

- r<sub>3</sub> (1) Subject to Sentence (2), Ontario Regulation 350/06 (Building Code) made under the Act, as it read on December 31, 2013, is deemed to continue in force with respect to *construction* for which a permit has been applied for before January 1, 2014.
- (2) Sentence (1) does not apply unless the *construction* is commenced within six months after the permit is issued.

### r<sub>3</sub> 4.1.2. Transition, January 2015

#### 4.1.2.1. Transition Rule

- (1) Subject to Sentence (2), this Regulation, as it read on December 31, 2014, is deemed to continue in force with respect to *construction* for which a permit has been applied for before January 1, 2015.
- (2) Sentence (1) does not apply unless the *construction* is commenced within six months after the permit is issued.

### r<sub>3</sub> 4.1.3. Transition, January 2017

#### 4.1.3.1. Transition Rule

- r<sub>5</sub> (1) Subject to Sentence (2), Item 337 (MMAH Supplementary Standard SB-5, “Approved Sewage Treatment Units”) of Table 1.3.1.2. and Sentence 8.6.2.2.(5) of Division B of this Regulation, as they read on December 31, 2016, are deemed to continue in force with respect to *construction* for which a permit has been applied for before January 1, 2017.
- (2) Sentence (1) does not apply unless the *construction* is commenced within six months after the permit is issued.

## Section 4.2. Amendments

### 4.2.1. Amendments

#### r<sub>3</sub> 4.2.1.1. Amendments

- (1) Clause 1.4.1.2.(1)(c) of Division A of this Regulation is amended by adding the following definition:

*Lake Simcoe watershed* has the same meaning as in section 2 of the *Lake Simcoe Protection Act, 2008*.

- r<sub>5</sub> (2) Item 337 (MMAH Supplementary Standard SB-5, “Approved Sewage Treatment Units”) of Table 1.3.1.2. of Division B of this Regulation is revoked.

- (3) Sentence 8.6.2.2.(5) of Division B of this Regulation is revoked and the following substituted:

(5) A *treatment unit* is deemed to comply with Sentences (1) and (2) if it has been certified to CAN/BNQ 3680-600, “Onsite Residential Wastewater Treatment Technologies” using a temperature condition listed under option a) or b) of Clause 8.2.2. of that standard.

- (4) Sentence 1.10.2.3.(2) of Division C of this Regulation is amended by striking out “and” at the end of Clause (2)(a) and by adding the following Clauses:

- (a.1) portions of the strip of land along the *Lake Simcoe shoreline* described in Sentence (3),
- (a.2) the strip of land that is located along each of the following rivers, streams, lakes or ponds and that is 100 m wide measured horizontally and perpendicular to and upland from the river, stream, lake or pond,
  - (i) any river or stream in the Lake Simcoe watershed that continually flows in an average year,
  - (ii) any lake or pond in the Lake Simcoe watershed that is connected on the surface to a river or stream described in Subclause (i), and
  - (iii) any other lake or pond in the Lake Simcoe watershed that has a surface area greater than 8 hectares, and

- (5) Article 1.10.2.4. of Division C of this Regulation is amended by adding the following Sentence:

(1.1) An inspection required under Sentence 1.10.2.3.(1) shall be conducted in respect of a *sewage system* in an area described in Clause 1.10.2.3.(2)(a.1) or (a.2),

- (a) initially, no later than,
  - (i) January 1, 2021, in the case of a *sewage system constructed* before January 1, 2016, or
  - (ii) five years after the *construction* of the *sewage system*, in the case of a *sewage system constructed* on or after January 1, 2016, and
- (b) thereafter, every five years after the most recent inspection of the *sewage system* has been conducted.

## Section 4.3. Revocation

### 4.3.1. Revocation

#### 4.3.1.1. Revocation

- (1) Ontario Regulation 350/06 is revoked.



# **2012 Building Code Compendium**

## **Volume 2**

**January 1, 2015 update**

**COMMENCEMENT**

Supplementary Standards SA-1, SB-1 to SB-13 and SC-1 come into force on the 1st day of January, 2014.

See “Code Amendment History” page in the Preface of Volume 1 for information concerning amendments to Supplementary Standards issued through Minister’s Rulings.

- a<sub>1</sub> Amendment made to Appendix A or B issued for January 1st, 2014.
- a<sub>2</sub> Amendment made to Appendix A or B issued for January 1st, 2014.
- a<sub>2.1</sub> Amendment made to Appendix A or B issued for January 1st, 2015.
- a<sub>3</sub> Amendment made to Appendix A or B issued for January 1st, 2015.

**EDITORIAL**

- e<sub>1</sub> Editorial correction issued for January 1st, 2014.
- e<sub>2</sub> Editorial correction issued for January 1st, 2014.
- e<sub>2.1</sub> Editorial correction issued for January 1st, 2015.
- e<sub>3</sub> Editorial correction issued for January 1st, 2015.

**COVER PHOTO CREDITS**

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**ISBN 978-1-4606-4420-1 (set)**  
**ISBN 978-1-4606-4422-5 (vol. 2)**  
**ISBN 978-1-4606-4765-3 (January 1, 2015 update)**

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**e<sub>3</sub> A-3 Application of Part 3.**

In applying the requirements of this Part, it is intended that they be applied with discretion to buildings of unusual configuration that do not clearly conform to the specific requirements, or to buildings in which processes are carried out which make compliance with particular requirements in this Part impracticable.

The definition of “building” as it applies to this Code is general and encompasses most structures, including those which would not normally be considered as buildings in the layman’s sense. This occurs more often in industrial uses, particularly those involving manufacturing facilities and equipment that require specialized design that may make it impracticable to follow the specific requirements of this Part. Steel mills, aluminum plants, refining, power generation and liquid storage facilities are examples. A water tank or an oil refinery, for example, has no floor area, so it is obvious that requirements for exits from floor areas would not apply.

Requirements for structural fire protection in large steel mills and pulp and paper mills, particularly in certain portions, may not be practicable to achieve in terms of the construction normally used and the operations for which the space is to be used. In other portions of the same building, however, it may be quite reasonable to require that the provisions of this Part be applied (e.g., the office portions). Similarly, areas of industrial occupancy which may be occupied only periodically by service staff, such as equipment penthouses, normally would not need to have the same type of exit facility as floor areas occupied on a continuing basis.

**a<sub>3</sub> Firefighting Assumptions**

The requirements of this Part are based on the assumption that firefighting capabilities are available in the event of a fire emergency. These firefighting capabilities may take the form of a paid or volunteer public fire department or, in some cases, a private fire brigade. If these firefighting capabilities are not available, additional fire safety measures may be required.

Firefighting capability can vary from municipality to municipality. Generally, larger municipalities have greater firefighting capability than smaller ones. Similarly, older, well established municipalities may have better firefighting facilities than newly formed or rapidly growing ones. The level of municipal fire protection considered to be adequate will normally depend on both the size of the municipality (i.e., the number of buildings to be protected) and the size of buildings within that municipality. Since larger buildings tend to be located in larger municipalities, they are generally, but not always, provided with a higher level of municipal protection.

Some level of municipal firefighting capability was assumed in developing many of the fire safety provisions in Part 3. The requirements in the Code, while developed in the light of commonly prevailing municipal fire protection levels, do not attempt to relate the size of building to the level of municipal protection. The responsibility for controlling the maximum size of building to be permitted in a municipality in relation to local firefighting capability rests with the municipality.

The municipality may, in light of its firefighting capability, elect to introduce zoning restrictions to ensure that the maximum building size is related to available municipal fire protection facilities. This decision should be made in consultation with the local firefighting service, who are aware of their capability to fight fires.

The requirements of Subsection 3.2.3. are intended to prevent fire spread from thermal radiation assuming there is adequate firefighting available. It has been found that periods of from 10 to 30 minutes usually elapse between the outbreak of fire in a building that is not protected with an automatic sprinkler system and the attainment of high radiation levels. During this period, the specified spatial separations are intended to inhibit ignition of an exposed building face or the interior of an adjacent building by radiation. Subsequently, however, reduction of the fire intensity by firefighting and the protective wetting of the exposed building face will often be necessary as supplementary measures to inhibit fire spread.

In the case of a building that is sprinklered, the automatic sprinkler system is intended to control the fire to an extent that radiation to neighbouring buildings should be minimal. Although there will be some radiation effect on a sprinklered building from a fire in a neighbouring building, the internal sprinkler system should control any fires that might be ignited in the building and thereby minimize the possibility of the fire spreading into the exposed building. NFPA 80A, “Recommended Practice for Protection of Buildings from Exterior Fire Exposures”, provides additional information on the possibility of fire spread at building exteriors.

The water supply requirements for fire protection installations depend on the requirements of any automatic sprinkler installations and on the number of fire streams that may be needed at any fire, having regard to the length of time the streams will have to be used. Both these factors are largely influenced by the conditions at the building to be equipped, and the quantity and pressure of water needed for the protection of both the interior and exterior of the building. These considerations must be ascertained before the water supply is decided upon.

Acceptable water supplies may be:

- a public waterworks system that has adequate pressure and discharge capacity,
- automatic fire pumps,
- pressure tanks,
- manually controlled fire pumps in combination with pressure tanks,
- gravity tanks, and/or
- manually controlled fire pumps operated by remote control devices at each hose station.

(See also A-3.2.5.7. Water Supply)

### **A-3.1.2. Use Classification.**

The purpose of classification is to determine which requirements apply. This Code requires classification in accordance with every major occupancy for which the building is used or intended to be used. Where necessary, an application clause has been inserted in this Part to explain how to choose between the alternative requirements that multiple occupancy classification may present.

#### **A-3.1.2.1.(1) Major Occupancy Classification.**

The following are only examples of the major occupancy classifications described in Table 3.1.2.1. To ensure the correct classification, refer to the definitions for each occupancy in Part 1 of Division A.

##### **Group A, Division 1**

Motion picture theatres  
Opera houses  
Television studios admitting a viewing audience  
Theatres, including experimental theatres

##### **Group A, Division 2**

Art galleries  
Auditoria  
Bowling alleys  
Child care facility  
Churches and similar places of worship  
Clubs, nonresidential  
Community halls  
Courtrooms  
Dance halls  
Exhibition halls (other than classified in Group E)  
Gymnasias  
Lecture halls  
Libraries  
Licensed beverage establishments  
Museums  
Passenger stations and depots  
Recreational piers  
Restaurants  
Schools and colleges, nonresidential  
Undertaking premises

##### **Group A, Division 3**

Arenas  
Indoor swimming pools  
Rinks

##### **Group A, Division 4**

Amusement park structures (not elsewhere classified)  
Bleachers  
Grandstands  
Reviewing stands  
Stadia

##### **Group B, Division 1**

Jails  
Penitentiaries  
Police stations with detention quarters  
Prisons  
Psychiatric hospitals with detention quarters  
Reformatories with detention quarters

**Group B, Division 2**

Facilities for people with developmental disabilities  
Homes for the aged  
Hospitals  
Infirmaries  
Long term care  
Nursing homes  
Psychiatric hospitals without detention quarters  
Reformatories without detention quarters  
Sanatoria without detention quarters

**Group B, Division 3** (See also Sentence 3.1.2.5.(1).)

Children's custodial homes  
Convalescent homes  
Group homes for people with developmental disabilities  
Residential care facilities  
Sanatoria without detention quarters

**Group C**

Apartments  
Boarding houses  
Camps for housing workers  
Clubs, residential  
Colleges, residential  
Convents  
Dormitories  
Group homes  
Halfway houses, drug and alcohol treatment  
Hostels  
Hotels  
Houses  
Lodging houses  
Monasteries  
Motels  
Open and semi-secure detention for youth  
Recreational camps  
Rooming houses  
Schools, residential  
Shelters for homeless  
Shelters for women

**Group D**

Banks  
Barber and hairdressing shops  
Beauty parlours  
Dental offices  
Dry cleaning establishments, self-service, not using flammable or explosive solvents or cleaners  
Laundries, self-service  
Medical offices  
Offices  
Police stations without detention quarters  
Radio stations  
Small tool and appliance rental and service establishments

**Group E**

Department stores  
Exhibition halls  
Markets  
Restaurants with an occupant load not more than 30 persons consuming food and drink  
Shops  
Stores  
Supermarkets

**Group F, Division 1**

Bulk plants for flammable liquids  
Bulk storage warehouses for hazardous substances  
Cereal mills  
Chemical manufacturing or processing plants  
Distilleries  
Dry cleaning plants using flammable or explosive solvents or cleaners  
Feed mills  
Flour mills  
Grain elevators  
Lacquer factories  
Paint, varnish and pyroxylin product factories  
Rubber processing plants  
Spray painting operations

**Group F, Division 2**

Aircraft hangars  
Cold storage plants  
Dry cleaning establishments not using flammable or explosive solvents or cleaners  
Electrical substations  
Freight depots  
Helicopter landing areas on roofs  
Laboratories  
Laundries, except self-service  
Planing mills  
Printing plants  
Repair garages  
Self-service storage buildings  
Service stations  
Storage rooms  
Television studios not admitting a viewing audience  
Tire storage  
Warehouses  
Woodworking factories

**Group F, Division 3**

Creameries  
Laboratories  
Power plants  
Storage garages, including open air parking garages  
Storage rooms  
Warehouses

**A-3.1.3.2.(3) Food Premises.**

This requirement is intended to apply to facilities where food is being prepared, stored, processed or served, such as restaurants, commercial kitchens, cafeterias, camps, milk plants and bakeries.

**A-3.1.4.2.(1)(c) Thermal Barrier in Combustible Construction.**

Any thermal barrier that is accepted under the requirements of Sentence 3.1.5.12.(2) for noncombustible construction is also acceptable for combustible construction.

**A-3.1.4.3. Wire and Cable Equivalence.**

Electrical wires and cables that conform to the requirements of Sentence 3.1.5.18.(1) are deemed to satisfy the requirements of Sentence 3.1.4.3.(1).

**A-3.1.4.3.(1)(b)(i) Raceway Definition.**

The term raceway is defined in Ontario Electrical Safety Code and includes both rigid and flexible conduit.

**A-3.1.5.4.(1) Skylight Spacing.**

The minimum spacing dimensions for skylight assemblies are based on the distance that flame must travel along a flat ceiling surface. If ceilings have projecting beams or other features that would increase the distance the flame would have to travel along the surface, the distances specified may be measured accordingly.

**A-3.1.5.5.(1) Combustible Elements.**

These requirements allow for exterior wall assemblies incorporating combustible elements on buildings of noncombustible construction. Since the tested assemblies must be representative of actual construction, the performance of the entire assembly is assessed with regard to its ability to resist flame propagation up the outside of a building. The thermal barrier protection limits the impact of an interior fire on the wall assembly.

These requirements, in combination, thus allow for wall assemblies containing both combustible cladding elements and non-loadbearing combustible framing members. These wall assemblies can be used as infill or panel type walls between structural elements, or attached directly to a loadbearing noncombustible structural system. These requirements, however, do not waive others specifically intended for the protection of combustible insulation in buildings of noncombustible construction.

These requirements are predicated upon the assumption that the manufacturing process and field installation procedure are both carried out under an independent quality assurance program designed to confirm that the product and its application are consistent with the system as tested.

**A-3.1.5.5.(3) Flame-Spread Distance.**

The maximum flame-spread distance refers to the distance between the top of the opening and the highest observable instance of flaming along the wall assembly and thus allows intermittent flaming to a height of 5 m above the opening.

**A-3.1.5.5.(4) Heat Flux Measurement.**

The heat flux to the assembly referred to in Sentence 3.1.5.5.(3) is the maximum one-minute averaged heat flux measured by transducers located 3.5 m above the top of the opening. The intent of this criterion is to limit the spread of fire on the wall assembly to a height of 3.5 m above the opening.

Since the exact location of flaming on the exterior surface of a wall assembly can be influenced by the presence of furring strips, cavities, etc., in the assembly, which could channel the flame away from a heat flux transducer, sufficient transducers should be located at any given height to intercept any flaming that could occur along the assembly. The exact position of the transducers will depend on the location of cavities, joints, studs or furring strips in the assembly.

fact, restricted to concrete or masonry. Sentences 3.1.10.2.(3) and (4) are intended to retain both of the characteristics of firewalls, while permitting greater flexibility in the use of materials and designs. The fire-resistance rating and damage protection attributes of a firewall may be provided by a single fire- and damage-resistant material such as concrete or masonry, by a fire- and damage-resistant membrane on a structural frame, or by separate components - one that provides the fire-resistance rating and another one that protects the firewall against damage.

If the firewall is composed of separate components, the fire-resistance rating of the fire-resistive component needs to be determined for this assembly on its own. In addition, if the damage protection component is physically attached to the fire-resistive component (for example, as a sacrificial layer), then, for the purposes of determining the overall performance of the assembly, it is also necessary to determine through testing whether failure of the damage protection component during a fire affects the performance of the fire-resistive component.

**a<sub>3</sub> A-3.1.11.5.(1) Fire Blocks in Combustible Construction.**

Combustible construction referred to in Sentence 3.1.11.5.(1) includes all types of construction that do not comply with the requirements for noncombustible construction. All of the elements within the concealed space can be combustible, unless required to be of noncombustible materials (e.g., certain categories of pipework and ducts). However, the value of the flame-spread rating of the combustible materials determines the permitted extent of the concealed space between fire blocks. The materials to be considered should include all construction materials regulated by this Code, including the framing and building services that are located in the concealed space. Consideration should be given when designing fire blocking to avoid restricting venting capabilities within concealed spaces. (See also A-5.6.2.1.)

**A-3.1.11.7.(6) Integrity of Fire Blocks.**

Sentence 3.1.11.7.(6) together with Article 3.1.9.1., is intended to ensure that the integrity of fire blocks is maintained in areas where they are penetrated. This requirement is satisfied by the use of generic fire stops such as mineral wool, gypsum plaster or Portland cement mortar, as well as rated fire stops.

**A-3.1.13.2.(2) Folding Partition.**

Folding partitions used to divide a space into separate rooms are not considered as doors for the purposes of this Sentence.

**A-3.1.15.1.(1) Roof Covering.**

The tests described in CAN/ULC-S107 are intended to measure the relative fire-performance of roof coverings when exposed to a fire originating from sources outside the building. When metal deck or a similar noncombustible rigid roof surface is directly exposed to the exterior (a covering material on its exterior surface has not been provided), the requirements of this Sentence need not apply.

**a<sub>3</sub> A-3.2.1.1.(3)(a) Mezzanine Area.**

The permitted area of the mezzanine for the purposes of determining the allowable percentage is to be based on the open area of the floor of the space in which the mezzanine is located. The Code does not restrict the enclosing of space below the mezzanine. However, the enclosed area must be deducted from the area of the overall space before applying the percentage allowance.

**A-3.2.1.1.(9) Accessible Service Space.**

These service spaces are often referred to as interstitial spaces and are designed to allow service personnel to enter and undertake maintenance or installation within the space. Catwalks or flooring are usually included to provide a walking or access surface. Even when flooring is included, it is not intended that the interstitial space should be considered as a storey for the purposes of the Code unless the space is used for purposes other than servicing or the storage of materials and equipment to be used for building services within that space.

**A-3.2.2.2.(1) Special and Unusual Structures.**

Examples of structures which cannot be identified with the descriptions of buildings in Articles 3.2.2.20. to 3.2.2.83. include grain elevators, refineries and towers. Publications that may be consulted to establish good engineering practice for the purposes of Article 3.2.2.2. include the NFPA Fire Protection Handbook, Factory Mutual Data Sheets, and publications of the Society for Fire Protection Engineering.

**A-3.2.2.18.(1) Sprinkler Extent.**

It is not the intent of Article 3.2.2.6. and Sentences 3.2.2.4.(1) and (2) to require the installation of an automatic sprinkler system throughout all storeys of a building regardless of the options in Articles 3.2.2.20. to 3.2.2.83. in order to construct one or more storeys without the installation of sprinklers.

Furthermore, unlike the model National Building Code, it is not the intent of this Code to require an automatic sprinkler system in storeys below a storey where an automatic sprinkler system is required. Similarly, if the uppermost storey or storeys of a building can be constructed without the installation of an automatic sprinkler system it is not necessary that an automatic sprinkler system required in a lower storey be extended into the upper storey or storeys.

**a<sub>3</sub> A-3.2.2.43A.(5) and A-3.2.2.50A.(4) Five- and Six-Storey Buildings of Combustible Construction.**

This Sentence and the exemptions noted in Sentences 3.2.2.6.(1) and 3.2.2.7.(1) permit a building within the scope of Articles 3.2.2.43A. and 3.2.2.50A. to be entirely of combustible construction and include certain assembly and mercantile occupancies and storage garages below the third storey.

**A-3.2.3. Fire Protection Related to Limiting Distance Versus Separation Between Buildings.**

Building Code provisions that address protection against fire spread from building to building use the limiting distance (see definition in Article 1.4.1.2. of Division A) for a building rather than using the distance between adjacent buildings on separate properties, so that the design and construction of a building on one property does not affect the design and construction of a building on an adjacent property.

The Building Code requirements that deal with reducing the probability of building-to-building fire spread were originally developed based on the assumption that the exposing building faces of the adjacent buildings are of similar size and configuration, and are equidistant from the shared property line. Where the buildings are of different sizes, the smaller building may be subject to a higher heat flux in the event of a fire compared to the larger building. Where the buildings are closely spaced and not equidistant from the property line, the construction of the building with the greater limiting distance does not recognize the proximity of the building with the lesser limiting distance.

The Building Code has more stringent requirements for buildings having lesser limiting distance with regards to the maximum area and spacing of unprotected openings, and the construction, cladding and fire resistance of walls. This increased stringency recognises that the fire hazard is greater where the buildings are close together and that adjacent buildings may have exposing building faces of different sizes, configurations or limiting distances, which could further increase the hazard.

The enforcement authority may also address limiting distances through legal agreements with parties involved that stipulate that the limiting distance be measured to a line that is not the property line. Such agreements would normally be registered with the titles of both properties.

**A-3.2.3.1.(4) Spatial Separation Design.**

In the application of Sentences 3.2.3.1.(3) and (4), it is intended that Sentence (3) be used first to establish the basic requirements for the exterior wall in terms of fire-resistance rating, type of construction and type of cladding. The percentage of unprotected openings determined from the application of Sentence (3) would be unnecessarily restrictive if the actual unprotected openings occur in a plane that is set back from the front of the building face.

Sentence (4) applies to the calculation of the allowable percentage of unprotected openings based upon projection onto a plane that is in front of all unprotected openings. The application of these two Sentences is shown in Figure A-3.2.3.1.(4). The modifications permitted by Article 3.2.3.12. would be applied, if applicable, to the area of unprotected openings derived from Sentence (4).



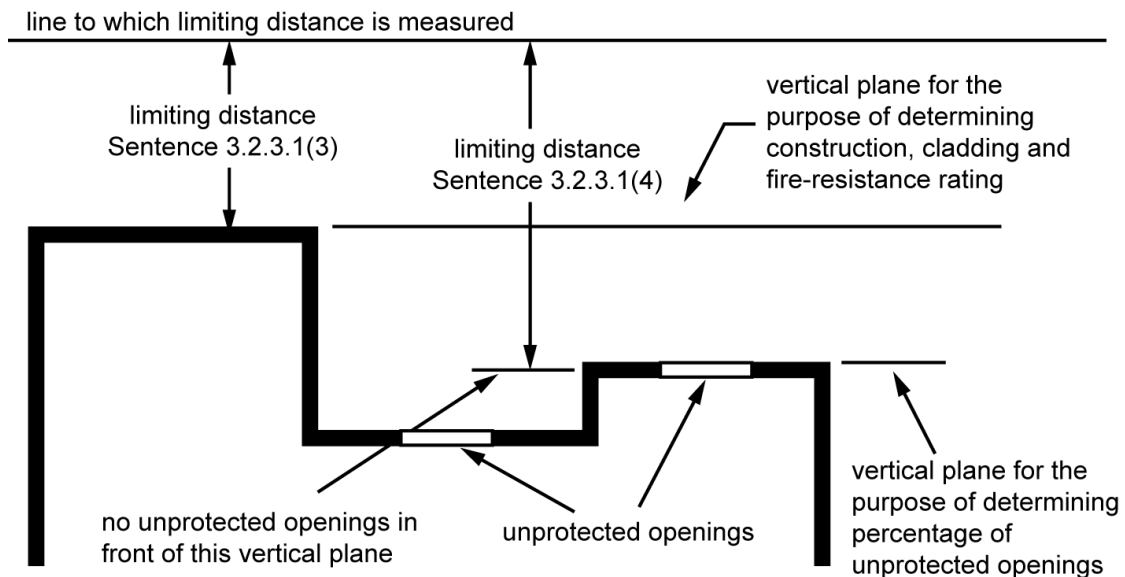


Figure A-3.2.3.1.(4)  
Spatial Separation Design

#### **A-3.2.3.6.(2) Protection of Roof Soffits Near Property Lines.**

Sentences 3.2.3.6.(2) to (4) provide requirements for the protection of soffits where the soffit of the subject building is located close to the property line or to an imaginary line between two buildings on the same property. Fire from inside the roof space of the subject building can exit unprotected soffits and expose the adjacent building to flames.

#### **A-3.2.3.12.(1) Increased Openings Permitted.**

No increase of the maximum area of unprotected openings in an exposing building face should be applied until the requirements of Article 3.2.3.7. have been satisfied in determining the construction of the exposing building face.

#### **A-3.2.3.14. Wall Exposed to Another Wall.**

The intent of this Article is to ensure that the control of fire spread by the interior fire separations between adjacent fire compartments is not defeated through the spread of fire by thermal radiation outside the building. Minimum separations ( $D_o$ ) are specified between unprotected openings in separate fire compartments of the building where the exterior faces of these compartments are deemed to expose each other to a thermal radiation hazard. This situation may arise where the angle,  $\theta$ , between the intersecting planes of the exposing building faces is less than  $135^\circ$  and both of these faces have unprotected openings. The exterior walls of the fire compartments do not have to intersect in order to apply Article 3.2.3.14. Rather, the critical factor is the angle,  $\theta$ , between the planes formed by the exterior walls. Examples are shown in Figures A-3.2.3.14.A., A-3.2.3.14.B. and A-3.2.3.14.C. of situations which would be addressed by this Article.

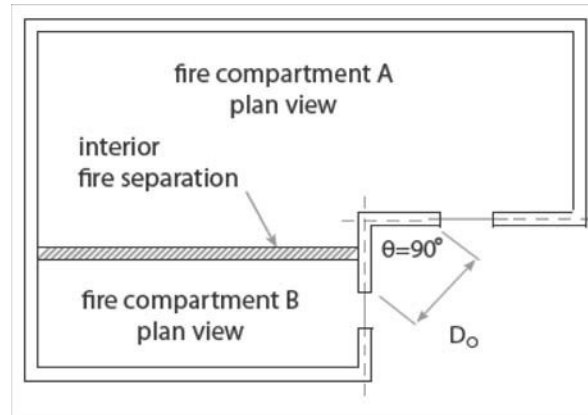


Figure A-3.2.3.14.A.  
Openings in Walls at a Right-Angle Corner

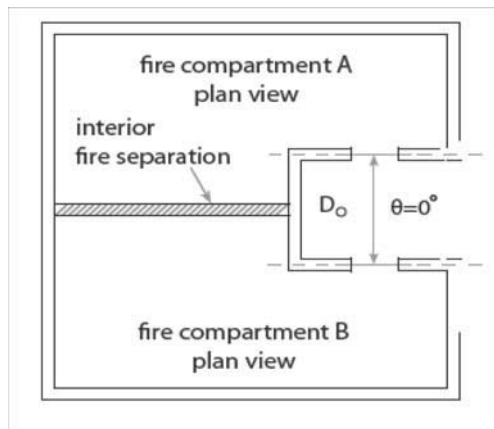


Figure A-3.2.3.14.B.  
Openings in Walls which are Parallel to One Another

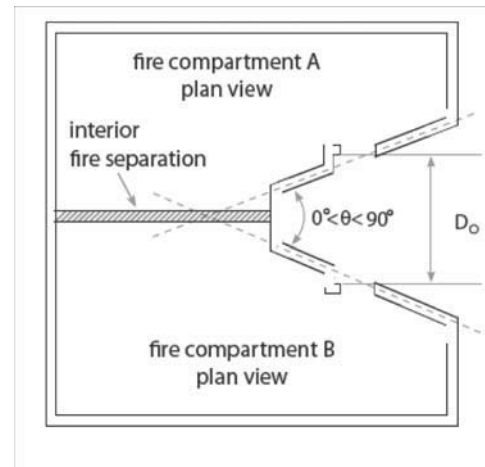


Figure A-3.2.3.14.C.  
Openings in Walls with an Included Angle  
of 45 Degrees

The exterior unprotected openings in the fire compartments are not deemed to expose each other to a thermal radiation hazard if:

- the angle formed between the planes of the exposing building faces is  $135^\circ$  or more, or
- the fire compartments are sprinklered.

In order to apply Sentence 3.2.3.14.(1), both of the exterior walls must have unprotected openings. Sentence (1) does not apply where the exterior wall of only one fire compartment has unprotected openings. The separation of exterior unprotected openings in adjacent fire compartments is not required if the openings in both compartments are in the same plane ( $\theta = 180^\circ$ ).

Sentence 3.2.3.14.(2) requires the exterior walls of each fire compartment within the distance,  $D_o$  to have a fire-resistance rating. The fire-resistance rating must be at least equal to the required interior separation between the fire compartments. Thermal radiation from an opening is substantially reduced at angles less than  $45^\circ$  from the plane of the unprotected opening. This may be shown schematically in Figure A-3.2.3.14.D.:

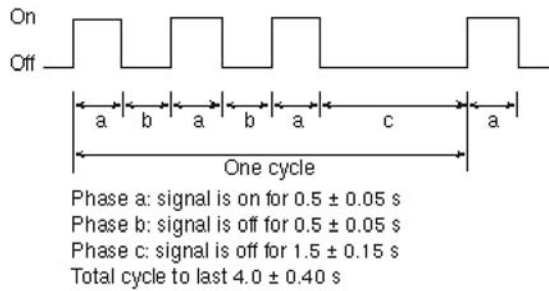


Figure A-3.2.4.20.(2).A.  
 Temporal Pattern for Fire Alarm Signal

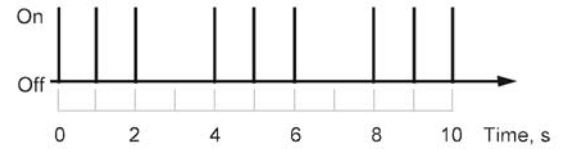


Figure A-3.2.4.20.(2).B.  
 Temporal Pattern Imposed on a Single Stroke Bell or Chime

**Note:**

- (1) The on phase represents the time that the striker mechanism is actuated. The sound produced by the bell or chime will continue at a level that decreases until the striker mechanism is re-actuated.

**A-3.2.4.20.(3) Audibility of Alarm Systems.**

It is very difficult to specify exactly what types of sound patterns are considered to be “significantly different” from one another. The intent is to ensure that there is a noticeable or measurable difference between the alert signals and the alarm signals such that it reduces the possibility of confusion.

**A-3.2.4.20.(5) Residential Sound Level.**

In a building in which corridors or hallways serve more than one suite or dwelling unit, there will be situations in which an audible signal device cannot be placed in the corridor or hallway to alert persons sleeping in suites and dwelling units, because the sound level in the vicinity of the device would exceed that permitted by Sentence 3.2.4.20.(4).

In these situations it will be necessary to supplement the building fire alarm system with an audible signal device in the suite or dwelling unit. These devices could be piezoelectric devices similar to the sounding units in many smoke alarms, subject to the device emitting the appropriate temporal pattern required by Sentence 3.2.4.20.(2).

The sound pressure level required in this Sentence should be measured when the suite is unfurnished and unoccupied.

**A-3.2.4.20.(9) Disconnect Device for Dwelling Units.**

In order to minimize the annoyance caused by false and unwanted alarms, the disconnect is intended to permit a person to silence the local audible device within the dwelling unit. At that time the person would be aware of sounds from devices in common spaces and could plan appropriate action.

**A-3.2.4.20.(10) Signal Circuits.**

Clause 3.2.4.20.(10)(a) permits Class A wiring, or Class B wiring with signal circuit isolators located outside of the suites, to serve audible signal devices within residential suites. Clause 3.2.4.20.(10)(b) permits a separate signal circuit to serve each suite without the need for signal circuit isolators or Class A wiring. Open circuits and Class A and Class B wiring circuits are terms defined in CAN/ULC-S524, “Installation of Fire Alarm Systems.”

**A-3.2.4.20.(13) Separate Signal Circuits.**

Sentence 3.2.4.20.(10) in combination with Sentence 3.2.4.20.(11) require separate audible signal circuits for dwelling units. It allows the designer the option to wire the audible signal devices in a dwelling unit on an individual circuit that serves each suite only or to wire the audible signal devices in a common circuit that serves the dwelling units within the floor area and is

separate from the circuit that serves the audible devices outside the dwelling unit. Compliance with either of the above two options would meet the intent of a separate circuit required in Sentence 3.2.4.20.(13).

#### **A-3.2.4.21.(1) Visual Alarm Pattern.**

CAN/ULC-S526, “Visible Signal Devices for Fire Alarm Systems Including Accessories”, published by Underwriters’ Laboratories of Canada, applies to visual signalling units. This document is referenced by the most recent standard for the installation of fire alarm systems and would automatically apply. Visual signalling devices with the same temporal pattern as required for audible devices are available from some sources and they should become available in Canada. Not all units that comply with the ULC standard will have sufficient power to adequately cover large areas; care will have to be taken to specify units with adequate power when large spaces are being designed.

#### **A-3.2.4.21.(2) Visual Signal.**

If staff located in each zone or compartment can see each sleeping room door, visual signals could be located above each door. If staff cannot see every door, it is intended that the visual signals be provided at the location where the staff are normally in attendance.

#### **A-3.2.4.22.(5) Smoke Alarm Installation.**

Ontario’s Electrical Safety Code permits a smoke alarm to be installed on most residential circuits that carry lighting outlets and receptacles. It is the intent of the Building Code that any other item on a circuit with a smoke alarm should be unlikely to be overloaded and trip the breaker with a resultant loss of power that is not sufficiently annoying for the breaker to be restored to the on position. It is considered that an interior bathroom light or a kitchen light fulfills this intent, but that circuits restricted to receptacles do not fulfill this intent.

#### **A-3.2.4.22.(7) Smoke Detectors in Lieu of Smoke Alarms.**

It is intended that the smoke detector in this application will function as per the requirements of a smoke alarm; specifically, it will be a localized alarm to the suite. The advantage of this type of installation is that the detector would be monitored by the fire alarm panel, which would provide notification to the supervisory personnel and be inspected as per CAN/ULC-S524, “Installation of Fire Alarm Systems.” It is not intended that smoke detectors used in lieu of smoke alarms will activate the fire alarm panel to send a signal to the fire department.

#### **a<sub>3</sub> A-3.2.4.22.(13) Smoke Alarms with a Visual Signalling Component.**

Smoke alarms with a visual signaling component can alert people who are deaf, deafened or hard of hearing to the presence of smoke in the dwelling just as the alarm sound provides an alert to people with no or low vision or who are sighted. The visual signal provides an extra level of safety alerts to building residents.

#### **A-3.2.4.23.(1)(b) Voice Messages.**

The concept of intelligibility expressed in Clause 3.2.4.23.(1)(b) is intended to mean that a person with average hearing and cognitive abilities is able to understand the messages that are transmitted into the space occupied by the person. The intelligibility of the message depends on the speech level, the background level, and the reverberation time of the space. ISO 7731, “Ergonomics - Danger Signals for Public and Work Areas - Auditory Danger Signals”, addresses audibility. The standard suggests that an A-weighted sound level at least 15 dB above the ambient is required for audibility, but allows for more precise calculations using octave or ½ octave band frequencies to tailor the alarm signal for particular ambient noise conditions. Design of the alarm system is limited to ensuring that all areas receive an adequately loud alarm signal. If a public address system is to be used to convey instructions during an emergency, then the requirements of the system are less straightforward.

#### **A-3.2.4.23.(2) Voice Intelligibility.**

Common intelligibility scale measuring requirements and guidance on the proper design of intelligible voice and alarm systems can be found in Annex A7.4.1.4 of NFPA 72, “National Fire Alarm and Signaling Code”.

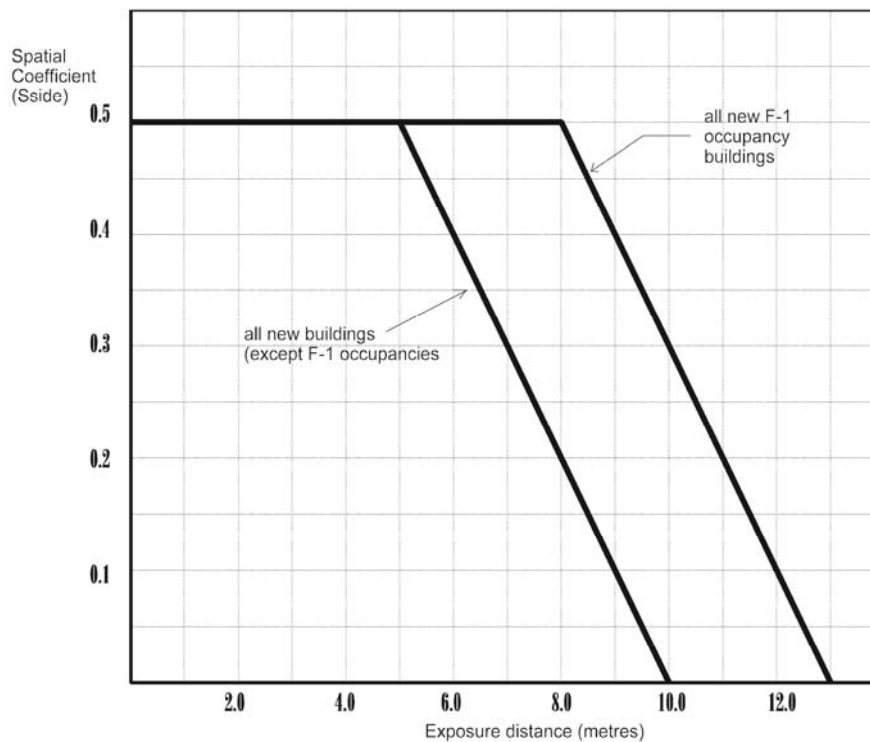


Figure 1  
Spatial Coefficient vs Exposure Distance

Further clarification of intent and sample problems and solutions are contained in the “Fire Protection Water Supply Guideline for Part 3 in the Ontario Building Code”. This guideline may be obtained through the Office of the Fire Marshal’s web site at: “[www.ofm.gov.on.ca](http://www.ofm.gov.on.ca)”

### **A-3.2.5.13.(1) Sprinkler System Design.**

In NFPA 13, “Installation of Sprinkler Systems”, reference is made to other NFPA standards which contain additional sprinkler design criteria. These criteria apply to industrial occupancies with high fire loads, including warehouses with high piled storage, and industrial occupancies intended for the use, manufacture or storage of highly flammable materials. Therefore, while only NFPA 13 is called up directly by Sentence 3.2.5.13.(1), the additional criteria in the other NFPA standards are included automatically.

In some NFPA standards, certain aspects of sprinkler protection are dependent on the fire-resistance rating of the vertical structural members. In these cases, the sprinkler system design options can be affected by the fire-resistance rating of these elements. For example, in buildings used for the storage of rubber tires, sprinklers directed at the sides of a column are required if the column does not have the required fire-resistance rating.

Other NFPA standards may require that certain occupancies be sprinklered in conformance with NFPA 13, as in the case of some garages. These requirements do not supersede the requirements in the Building Code. An occupancy is required to be sprinklered only when this is specified in the Building Code, but when it is so required, it must be sprinklered in conformance with NFPA 13 and its referenced standards.

### **A-3.2.5.13.(6) Sprinklering of Roof Assembly.**

Sprinkler protection for roof assemblies in lieu of fire resistance is based on the assumption that the sprinklers will protect the roof assembly from the effects of fire in spaces below the roof. If a ceiling membrane is provided, the sprinklers would have to be located below the membrane in order to react quickly to the fire. In certain instances, however, sprinklers may be required within the concealed spaces as well as below the membrane. NFPA 13, “Installation of Sprinkler Systems”, requires sprinklers in certain concealed spaces.

According to NFPA 13 and 13R, rooms and closets within a dwelling unit in a sprinklered building, including those in the storey immediately below the roof assembly do not require sprinklers. However, the Building Code requires sprinkler protection within all rooms and closets immediately below the roof so as to control any fire that might start in that space and thereby limit the probability of the fire spreading into the roof assembly.

Moreover, NFPA 13D, “Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes,” also allows the omission of sprinklers in such rooms and closets under certain circumstances, provided the building is sprinklered in conformance with this standard. In this case, the Building Code concurs with the provisions of the NFPA 13D standard.

**a<sub>3</sub> A-3.2.5.13.(7) Balconies and Decks.**

The intent of this provision is to suppress or control a fire starting on a balcony or deck which could spread to the balcony above, roof assembly or other parts of the building. It is not intended to apply to a roof top deck or uppermost balcony where there are no parts of the building above.

**e<sub>3</sub> A-3.2.5.13.(8) Sprinkler Rating.**

The requirements of this Sentence can be met by using sprinklers with a rating of 79°C to 107°C.

**A-3.2.5.14.(1) Hazard Classification for Sprinkler Selection.**

The reference to light hazard occupancies is based on the descriptions of these occupancies given in NFPA 13, “Installation of Sprinkler Systems” and is intended only for use in the design of sprinkler systems. These descriptions should not be confused with the occupancy classifications in the Building Code.

In NFPA 13 a light hazard occupancy is one in which the quantity or combustibility of contents is low and fires with relatively low rates of heat release are expected. Typical buildings or parts of buildings include: churches; clubs; eaves and overhangs, if of combustible construction with no combustibles beneath; educational buildings; hospitals; institutional buildings; libraries, except very large stack rooms; museums; long term care or convalescent homes; offices, including data processing rooms; residential buildings; restaurant seating areas; theatres and auditoria, excluding stages and proscenias; and unused attics.

Although NFPA 13R, “Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height”, and NFPA 13D, “Installation of Sprinkler Systems in One- and Two-Family Dwellings and Mobile Homes”, as referenced by NFPA 13, are concerned with specific types of residential occupancy, namely apartment buildings up to four storeys, one and two family dwellings, and mobile homes, for the purpose of acceptance of combustible sprinkler piping these occupancies are considered to be included in the category of residential buildings under light hazard occupancies.

**A-3.2.5.19.(1) Fire Pumps.**

In order to ensure an adequate water supply, it may be necessary to install a fire pump for a building that has either a standpipe system or an automatic sprinkler system installed. Reference to NFPA 20, “Installation of Stationary Pumps for Fire Protection”, provides the necessary guidance to designers.

**A-3.2.6. High Buildings.**

It is assumed that buildings regulated by Subsection 3.2.6. will be in an area served by a fire department capable of an early response and that all firefighting and rescue situations will be under the direct control of the officer-in-charge of the fire department responding to the emergency.

Measures that relate to limiting or controlling the movement of smoke caused by a building fire are described in the Supplementary Standard SB-4. Adoption of one of these measures is considered to be an acceptable means of complying with the requirements of this Subsection.

**A-3.2.6.4.(6)(a) Elevator Recall.**

Automatic emergency recall actuation that is dependent on the operation of 2 smoke detectors in the elevator lobby meets the intent of this requirement. Such an arrangement may reduce the frequency of nuisance recalls.



Figure A- 3.4.5.1.(2)(c)(i)  
Emergency Exit Left Symbol (E001) from ISO 7010

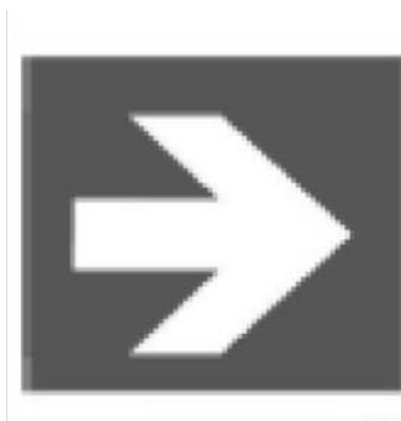


Figure A- 3.4.5.1.(2)(c)(iii)  
Emergency Exit Directional Arrow (E005) from ISO 7010

#### **A-3.4.5.1.(5) Photoluminescent Exit Signs.**

An external lighting source is required to properly charge photoluminescent signs. These types of signs must be lit in conformance with the charging requirements stated in CAN/ULC-S572, “Photoluminescent and Self-Luminous Exit Signs and Path Marking Systems”.

#### **A-3.4.5.2.(2) Stairwell Signs.**

Past experience indicates that some persons attempt to exit at the roof level of a building in the event of an emergency. Rescue from the roof of a building more than six storeys high is rarely possible from the exterior of a building. In order to avoid instances of persons getting trapped by smoke at the top of a stairwell that has no access to a roof, signs are required within the stairwell (at least one sign immediately above the highest normally occupied floor level) to indicate that the stairwell does not provide an exit at the roof level. The sign should consist of a graphic and text to indicate that there is no exit to the roof.

#### **A-3.4.6. Application to Means of Egress.**

The requirements in Subsection 3.4.6. apply to interior and exterior exits, as well as to ramps, stairways and passageways used by the public as access to exit. The treads, risers, landings, handrails and guards for the latter access to exit facilities must thus be provided in conformance with the appropriate requirements for exit facilities.

a<sub>3</sub> **A-3.4.6.1.(2) Surface Finish of Ramps and Stairs.**

A tactile attention indicator strip signals a warning to people with no or low vision that they are approaching a change in level. The strip is set back from the leading edge of the stair to provide sufficient warning of the change in level in advance.

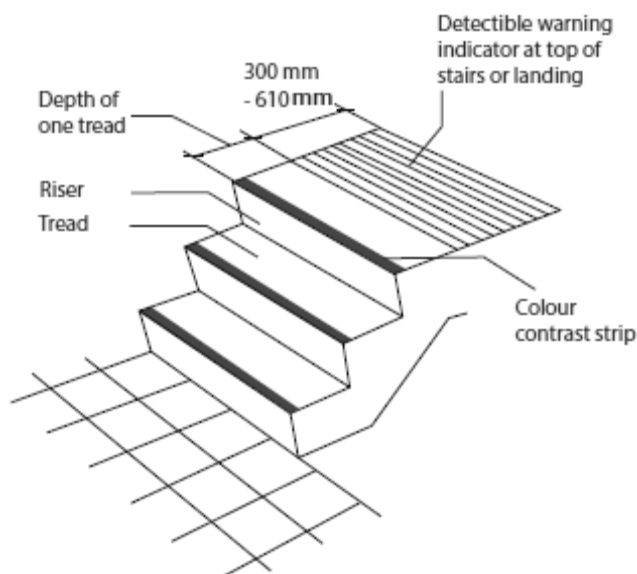


Figure A-3.4.6.1.(2)  
Tactile Indicator at Stairs and Ramps

**A-3.4.6.5.(3) Continuity of Handrail.**

Persons with vision loss rely on handrails to guide them on stairways. A continuous handrail will assist them in negotiating stairs at changes in direction. The extended handrail is useful to persons with physical disabilities to steady themselves before using the stairs. Handrails should, however, return to the wall, floor or post, so as not to constitute a hazard to persons with vision loss.

**A-3.4.6.8.(5) Stair Tolerances.**

The term “shall not differ significantly” assumes normal construction tolerances.

**A-3.4.6.10.(5) Door Swing.**

Although it is required that the door on the right hand side of a pair of doors shall swing in the direction of travel through the exit, the direction of swing of the door on the left side will depend on the function of the horizontal exit. If the horizontal exit provides for movement from one building to the adjacent building but does not require movement in the reverse direction, both doors must swing in the direction of travel to the adjacent building. If the design is based upon both buildings providing complementary movement in either direction, then the doors must swing in opposite directions. Location of a required exit sign directly above a door that swings in the direction of travel is deemed to meet the intent of Clause 3.4.6.10.(5)(b).

**A-3.4.6.11.(3) Exit Concealment.**

Hangings or draperies placed over exit doors may conceal or obscure them.

**A-3.4.6.16.(1) Fastening Device.**

Turnpieces of a type which must be rotated through an angle of more than 90° before releasing a locking bolt are not considered to be readily openable. The release of a locking bolt should allow the door to open without having to operate other devices on the door.



**A-3.4.6.16.(4) Electromagnetic Locks.**

Electromagnetic locks are intended for use where there is a need for security additional to that provided by traditional exit hardware. They are not intended for indiscriminate use as alternative locking devices.

The design of these devices requires evaluation to ensure that their operation will be fail-safe in allowing exiting in the event of foreseeable emergencies.

If more than one locking device is used in a building, it is expected that one switch will release and reset all devices simultaneously. If more than one such switch is provided in a building, at least one switch must be installed in the annunciator panel located at the main entrance of the building or, in the case of a building within the scope of Subsection 3.2.6., in the central alarm and control facility for easy access of fire department personnel.

Most importantly, electromagnetic locks are not to be used where panic hardware must be installed. This will ensure that a large number of occupants can exit a building quickly in emergency situations created by either fire or non-fire conditions. It will also ensure that occupants in buildings containing highly hazardous substances can exit quickly unimpeded in an emergency.

In care and treatment facilities, such as hospitals and long term care homes, and residential care facilities, however, because the occupant load is relatively low and the level of staff supervision is generally high, electromagnetic devices may be installed on exit doors at the bottom of exit stairways where panic hardware is required by code to maintain security where necessary.

When installed on doors in fire separations, electromagnetic locking devices must be used in conjunction with positive latching devices designed to hold the doors in the closed position since these locks do not incorporate latches and are released in an emergency. In a fire, keeping doors in fire separations closed is essential to control the spread of fire and smoke.

To enable exiting without delay (especially important in non-fire emergency situation), a manual pull station must be installed in close proximity to the door equipped with an electromagnetic locking device. The operation of this manual pull station will immediately release the electromagnetic locking device and, at the same time, activate the building fire alarm system.

Precautionary measures should be in place to ensure that by-pass switches would be deactivated at the completion of each fire alarm testing. An audible and a visual signal at the annunciator panel and at the monitoring station should provide such assurance.

**A-3.4.6.19.(1)(d) Colour Contrast.**

The identification of floor and other signs intended to facilitate orientation for visually-impaired persons should offer maximum colour contrast to be effective. For this reason, it is recommended that white on black or black on white be used, as this combination produces the best legibility. It is also recommended that the sign surfaces be processed to prevent glare.

**A-3.5.4.1.(1) Elevator Car Dimensions.**

In some circumstances, it is necessary to maintain a patient on a stretcher in the prone position during transit to a hospital or to treatment facilities. Inclining the stretcher to load it into an elevator could be fatal or at the very least detrimental to the patient's health. Many ambulance services use a 2 010 mm long by 610 mm wide mobile patient stretcher. As well as space for the stretcher in the elevator, there should be sufficient additional space for at least two attendants who may also be providing treatment during transit. Common elevator units that can satisfy this requirement include:

- a 1 134 kg elevator car with minimum interior dimensions of 2 032 mm wide and 1 295 mm deep with a right or left hand access door. The minimum access door width is 1 067 mm and it must be on the 2 032 mm side of the car.
- a 1 134 kg elevator car with minimum interior dimensions of 2 032 mm deep and 1 295 mm wide with a minimum 915 mm wide access door located on the 1 295 mm side.

**A-3.6.2.1.(1) Location of Fuel-Fired Appliances.**

Sentence 3.6.2.1.(1) requires that fuel-fired appliances be located in service rooms. It does not allow for their installation in service spaces.

**A-3.6.2.5.(1) Combustible Refuse Storage.**

Storage of refuse consisting of combustible materials including waste paper, cardboard and plastic, and noncombustible materials such as glass and metallic containers can be accumulated in these rooms for the purpose of recycling. This storage is allowed in consideration of a less stringent collection schedule when compared to that of garbage or refuse, which is collected regularly.

**A-3.6.3.1.(1) Vertical Service Spaces.**

Sentence 3.6.3.1.(1) does not prohibit the internal subdivision of a vertical service space to allow different building services to be installed in physically separated spaces unless other requirements apply (see, for example, Article 3.2.7.10.). Fire separation requirements apply to the perimeter of the group of service spaces. Article 3.6.3.3. has special requirements for linen chutes and refuse chutes.

**A-3.6.4.2.(2) Ceiling Membrane Rating.**

In construction assemblies that utilize membrane ceiling protection and have been assigned a fire-resistance rating on the basis of a fire test, the membrane is only one of the elements that contribute to the performance of the assembly and does not in itself provide the protection implied by the rating. For the fire-resistance rating of membrane materials used in this form of construction, reference should be made to the results of fire tests which have been conducted to specifically evaluate the performance of this element.

**A-3.7.2.1.(1) Window Area Limit.**

Part 9 requirements for windows cover a number of subjects, however, this Article refers only to the area limits.

**A-3.7.4.2.(1) Sanitary Facilities.**

It is assumed that if the sanitary facilities are provided on every storey, the occupant load for the determination of the number of fixtures would be the anticipated occupant load of that storey. If the washrooms are provided in a central location, the number of fixtures should then be based on the total anticipated occupant load for the areas that are served by that washroom.

**a<sub>2.1</sub> A-3.7.4.2.(8) Plumbing Fixtures for Small, Low Occupancy Uses.**

For small restaurants, retail and other small assembly uses with low occupancy loads, the number of washrooms provided may be reduced, where permitted, to provide some flexibility for space planning provided at least one universal washroom is provided in compliance with Sentence 3.8.3.12.(6) and one single washroom is provided and neither washroom is signed for gender.

**A-3.7.4.13.(1) Washrooms for Public Use.**

The definition of public use clarifies that facilities for public use must have unrestricted access. Since a washroom in a hotel room is restricted for the use of the hotel guest only, it is an example of a washroom that would be exempt from requiring a floor drain. Also, the definition of private use includes a washroom in a hotel suite.

**a<sub>3</sub> A-3.7.4.15.(1) Clearances for Water Closets.**

The minimum clearance in front of a water closet is intended to be measured from the front edge of the seat to:

- the nearest point of the wall or cubicle enclosure,
- another fixture, or
- the washroom door or stall door when the door is in the closed position.

**A-3.7.5.3.(1) Shielding of X-Ray Equipment.**

Every installation of an x-ray machine or x-ray equipment used for the exposure of persons shall be shielded with a primary and a secondary protective barrier to protect any person who could be exposed to radiation. This protection is required for

- x-ray workers
- persons other than patients undergoing an application of therapeutic or diagnostic x-rays
- persons in adjacent buildings
- persons located outdoors of buildings containing x-ray equipment.

These protective barriers should be designed and installed to comply with requirements of The Healing Arts Radiation Protection Act. Applications for approval for these installations should be addressed to the Ministry of Health and Long-Term Care.

Similarly, every installation of an x-ray machine or x-ray equipment for industrial or veterinary applications shall be shielded with a primary and a secondary protective barrier to protect any person who could be exposed to radiation. This protection is required for

- x-ray workers,
- persons other than x-ray workers,
- persons in adjacent buildings, and
- persons located outdoors of buildings containing x-ray equipment.

The protective barriers should be designed and installed to comply with requirements of The Occupational Health and Safety Act. Applications for approval for these installations should be addressed to the Ministry of Health and Long-Term Care.

#### **a<sub>2.1</sub> A-3.8. Barrier-Free Design Assumptions.**

This Section contains minimum provisions to accommodate a person using a typical manual wheelchair or other manual mobility assistance devices such as walking aids, including canes, crutches, braces and artificial limbs. The Code also includes provisions to address needs of people with sensory disabilities.

#### **a<sub>2.1</sub> A-3.8.1.1.(1)(b) Industrial Occupancies.**

Industrial buildings often pose a greater risk to their occupants due to the presence of significant quantities of dangerous materials or the use of hazardous processes. For example, plants which are classified as Group F, Division 2 or 3, may store and use toxic or highly flammable substances in significant quantities, or house processes which involve very high temperatures and which may have a high degree of automation. In some facilities, particularly in primary industries such as forestry and metallurgy, the construction normally used and the operations carried out within the space can make compliance with the requirements of Section 3.8. impractical. It is therefore intended that these requirements be applied with discretion in buildings of Group F, Division 2 or 3 major occupancy. However, where industrial buildings contain subsidiary occupancies, such as offices or showrooms, it is reasonable to require that accessibility be provided in these spaces.

#### **a<sub>2.1</sub> A-3.8.1.1.(1)(d) Camps for Temporary and Emergency Workers.**

The exemption of camps for housing of workers from barrier-free design requirements is intended to exempt accommodations for seasonal workers such as agricultural workers or emergency workers such as firefighters working in remote areas.

#### **a<sub>2.1</sub> A-3.8.1.2. Barrier-Free Entrances.**

A barrier-free path of travel should be provided from the sidewalk or roadway and parking areas to a barrier-free building entrance. This route should be located so that persons with disabilities do not have to pass behind parked cars. The number of barrier-free entrances to a building must be not less than the minimum number required in Table 3.8.1.2. in order to provide more general and equitable access to the building and should include the principal entrance. For the purpose of determining the number of entrances to a building, several adjacent doors in a bank of doors are considered to be a single entrance. The principal entrance to the building is the entrance that is normally used by the public or the building occupants.

#### **a<sub>2.1</sub> A-3.8.1.3.(4) Unobstructed Space.**

The 1800 mm by 1800 mm space spaced every 30 m provides a layby area where two wheelchairs can pass.

#### **a<sub>2.1</sub> A-3.8.1.3.(5) and (6)(b) Reduced Headroom.**

Wherever an overhead obstruction occurs within or adjacent to a barrier-free path of travel such as the underside of a stairway or escalator or a building structural element, a cane-detectable barrier will provide an effective warning to people with no or low vision that headroom is reduced and the path is obstructed to prevent them from moving toward the obstruction.

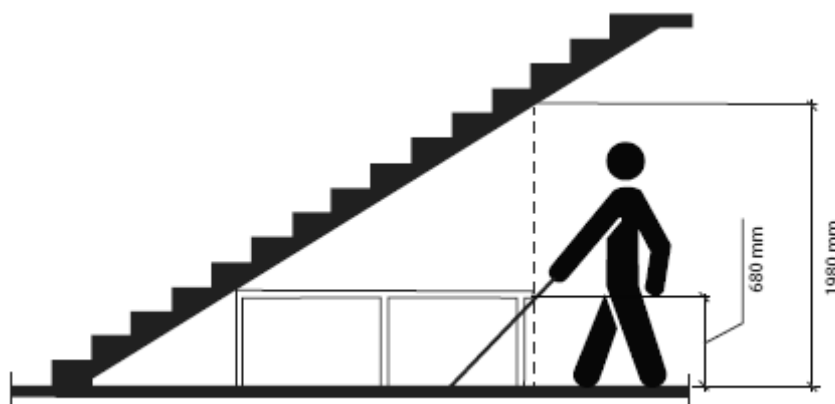


Figure A-3.8.1.3.(5) and (6)(b)  
Reduced Headroom

#### **A-3.8.1.4.(1) Access to Storeys Served by Escalators and Moving Walks.**

In some buildings, escalators and inclined moving walks are installed to provide transportation from one floor level to another floor level so as to increase the capacity to move large numbers of persons. Some buildings located on a sloping site are accessible from street level on more than one storey and an escalator or inclined moving walk is provided for internal movement from floor to floor. In both these situations, a person with a physical disability must be provided with an equally convenient means of moving between the same floor levels within the building. A wheelchair user should not be required to travel outside the building in order to gain access to another level. This can be accomplished by providing an elevator or a platform-equipped passenger-elevating device.

#### **a<sub>2.1</sub> A-3.8.1.5.(1) Controls.**

Building controls that are intended to be operated by the occupants include thermostats, light switches, intercoms and other controls for building use and comfort. It is not intended to include those controls that are secured for use by building operations, maintenance and management personnel.

Light switches, intercoms and similar devices located within a barrier-free path of travel should be located between 900 mm and 1100 mm above the finished floor. Thermostats should be mounted at 1200 mm on centre above the finished floor for the optimal operation.

#### **a<sub>2.1</sub> A-3.8.2.1.(1) Access to Rooms and Facilities.**

If barrier-free access is required into suites or rooms in Subsection 3.8.2., it is intended that access be provided, with some exceptions identified in Sentence 3.8.2.1.(3), throughout each room or suite. Some examples of where barrier-free access is required are as follows:

- within rooms or areas that serve the public or are designated for use by visitors, including areas in assembly occupancies with fixed seats, display areas and merchandising departments,
- within rooms or areas for student use in assembly occupancies,
- within general work areas, including office areas,
- within general use or general service areas, including shared laundry areas in residential occupancies, recreational areas, cafeterias, lounge rooms, lunch rooms and infirmaries,
- within sleeping rooms in hospitals and long term care homes,
- (if installed), into at least one passenger elevator or elevating device conforming to Article 3.8.3.5.,
- into washrooms described in Article 3.8.2.3.,
- to any facility required by this Section to be designed to accommodate persons with physical disabilities,
- onto every balcony provided in conformance with Sentence 3.3.1.7.(2),
- to service counters used by the general public (examples include ticket counters, refreshment stands, drinking fountains, cafeteria counters, checkout counters and bank service counters)
- into 10% of hotel suites, (not more than 20 suites required), and

**a<sub>3</sub> A-3.8.2.1.(6) Residential Bathrooms.**

The intent of the barrier-free features required in 15% of apartment bathrooms, is to provide basic manoeuvrability into, and within, the space for a wheelchair user. The door swing may overlap the turning circle within the bathroom as long as there is sufficient space for a wheelchair user to clear the door and close the door. The bathroom is not required to include a barrier-free bathtub or barrier-free shower meeting the requirements of Article 3.8.3.13. The intent is not to provide accessibility for a full range of disabilities which may require additional features to accommodate the specific needs of an individual resident. However, stud wall reinforcement for the future installation of grab bars is required in the main bathroom in all dwellings as set out in Articles 9.5.2.3. and 3.3.4.9.

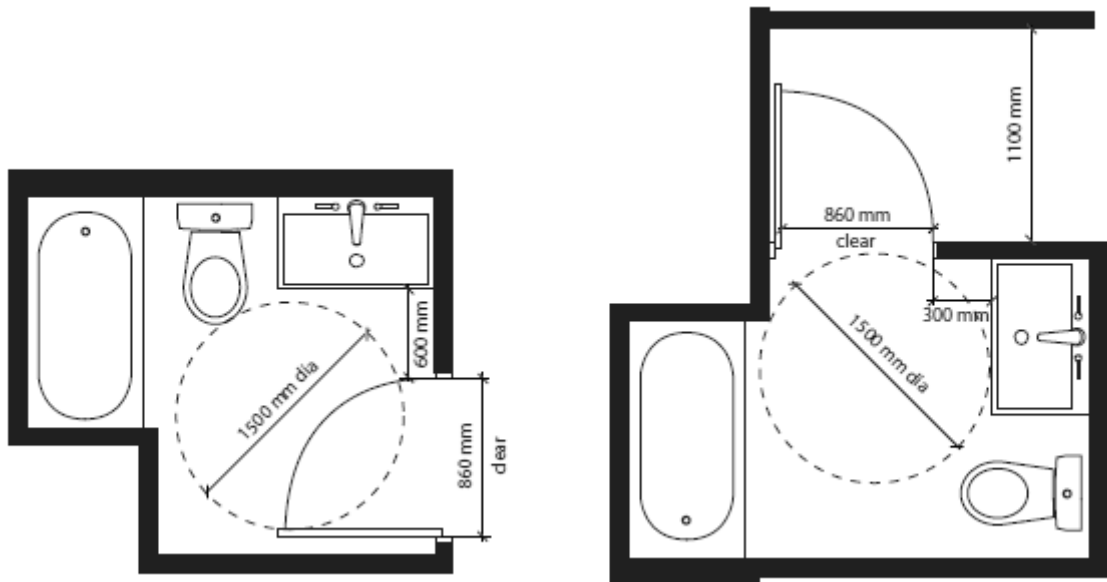


Figure A-3.8.2.1.(6)  
Residential Bathrooms

**A-3.8.2.1.(7) Distribution of Apartments with Accessible Features.**

The intent is to provide a variety of suite sizes and locations and not locate all suites with barrier-free design features on the same floor. The intention is to provide a level of visitability to apartments. Given the broad range of disabilities and the specific needs of people with disabilities in their home settings, the accessibility provisions may not provide all of the features required by an individual's personal needs that cannot be anticipated when the building is constructed initially.

The intent behind Sentence 3.8.2.1.(7) is that, in determining the proportion of barrier-free suites by unit size, the total number of barrier-free suites and the percentage of suites of each type (by number of bedrooms) should be calculated first. Those percentages should be multiplied by the total number of barrier-free suites required. For example, in a 40 unit apartment building with 30 one-bedroom and 10 two-bedroom units, 6 suites in total would be required to be barrier-free. The proportional breakdown of required barrier-free suites would be 75% or 5 one-bedroom suites and 25% or one two-bedroom suite. The proportion of units is also determined based on whole numbers and not based on fractions of units as long as the total number of barrier-free suites are provided.

- a<sub>3</sub>** Studio or bachelor apartments are a specific type suite and are intended to be counted separately when determining the proportion of suites, by type and size, in a building. Where studio or bachelor suites are provided, a proportionate number of studio or bachelor suites should also be accessible even though those suite types do not include a separate bedroom. For example, if 25% of the units in a building are studios, 50% are one-bedroom units and 25% are two-bedroom units, the same proportions should be reflected in the 15% of total units required to include barrier-free design features. The Building Code does not differentiate one- or two-bedroom units from one- or two-bedroom units with dens. The intent is that a range of unit types and sizes are available as accessible units.

**A-3.8.2.2.(1)(a) Access to Exterior Parking.**

It is not intended that a separate accessible entrance must be provided from the exterior parking area. The designer may choose to designate the entrance leading to the exterior parking area as the required entrance or provide a properly identified and unobstructed path of travel from the parking area to the entrance which is accessible. The entrance chosen should, in any case, be one normally used by the occupants of the building. Long paths of travel are not recommended.

**a<sub>2.1</sub> A-3.8.2.3. Washrooms.**

The primary intent of this requirement is that all regular washrooms be made accessible to all persons, including persons with disabilities, primarily persons who must use a wheelchair.

The exception in Clause (5)(b) recognizes situations where several washrooms may be provided on a large floor area. In such a case, not all washrooms need to be barrier-free, provided that a barrier-free washroom is available within a reasonable distance (45 m) of one that is not barrier-free and that the location of that barrier-free washroom is clearly indicated as required by Sentence 3.8.3.1.(3).

Clause 3.8.2.3.(5)(c) is intended to address “strip malls” (a shopping mall with no public corridor). Section 3.7, which requires plumbing facilities, does not address the concept of suite and could permit, for instance, a shopping mall containing only Group E occupancies (assuming the mall is more than 100 m<sup>2</sup>) to have only one washroom for each sex located in any one of the suites. It is desirable however that such washrooms be located so as to be accessible at all times, since the owner or tenant of one suite has no control over the activities of another. Such buildings may either provide public barrier-free washrooms in a central location or washrooms which can accommodate disabled persons in each suite. This arrangement relieves any one tenant from having to provide “public” washrooms. Hence, the exception for suites of less than 300 m<sup>2</sup> is meant as a relaxation to avoid an unnecessary burden on small facilities but should not be construed as meaning that such buildings need not provide accessible washrooms.

**a<sub>2.1</sub> A-3.8.2.3.(2) Minimum Number of Universal Washrooms.**

The requirements for the number of universal washrooms in buildings are set out in Article 3.8.2.3. and Table 3.8.2.3. A. Sentence 3.8.2.3.(2) refers back to Subsection 3.7.4. which sets out the number of washrooms required in buildings by occupancy.

The intent of the new requirements in Table 3.8.2.3.A is to provide additional universal washrooms in uses and occupancies where washrooms are required and not to require washrooms where they had not been required previously. For that reason the requirements are linked back to Subsection 3.7.4. For example, in the case of a high-rise apartment building, floors with only apartment units and without any common amenity spaces, would not require a universal washroom, nor would 3 levels of underground parking below the building.

Using the ratio of ‘1 universal washroom for every 3 storeys’ is a way to determine the number of universal washrooms in a building but without specifying where they should be located. The intent of the Code is to provide designers and building owners flexibility to locate the washrooms as appropriate to the building design and operation. For example, a six storey office building would require 2 universal washrooms (1 per 3 storeys) but those could both be on the same storey or on different storeys – not necessarily on the first and fourth floors or on every third storey.

**a<sub>2.1</sub> A-3.8.2.3.(3) Minimum Number of Barrier-Free Water Closet Stalls.**

Washrooms that contain barrier-free washroom stalls and barrier-free lavatories, typically meet the needs of single users with disabilities. The requirements for universal washrooms, in addition to barrier-free washrooms, accommodate people with disabilities who require assistance from a same or opposite gender care giver.

**a<sub>2.1</sub> A-3.8.2.3.(5)(b) Individual Washrooms.**

Washrooms, in excess of those required under Subsection 3.7.4., that are provided for private or individual use within an individual suite where washrooms for public use are provided elsewhere in the building, are not required to meet barrier-free design requirements. This could include a single user washroom that is part of a private office or a small retail store.

**a<sub>2.1</sub> A-3.8.2.3.(6) Ambulatory Water Closet Stalls.**

Washrooms on storeys that are not required to have a barrier-free path of travel are still required to provide a washroom stall in each washroom that includes certain barrier-free design elements in order to accommodate people with disabilities who are ambulatory but still need some supports.

**a<sub>3</sub> A-3.8.3.3.(11)(b) Doors in a Series.**

Where there are doors in a series such as an entry or washroom vestibule, there must be a full 1500 mm diameter turning circle or a linear dimension of 1500 mm provided within the vestibule that is clear of the door swing to ensure that persons using wheelchairs or other mobility devices can close the door behind them before proceeding through the next door in the series.

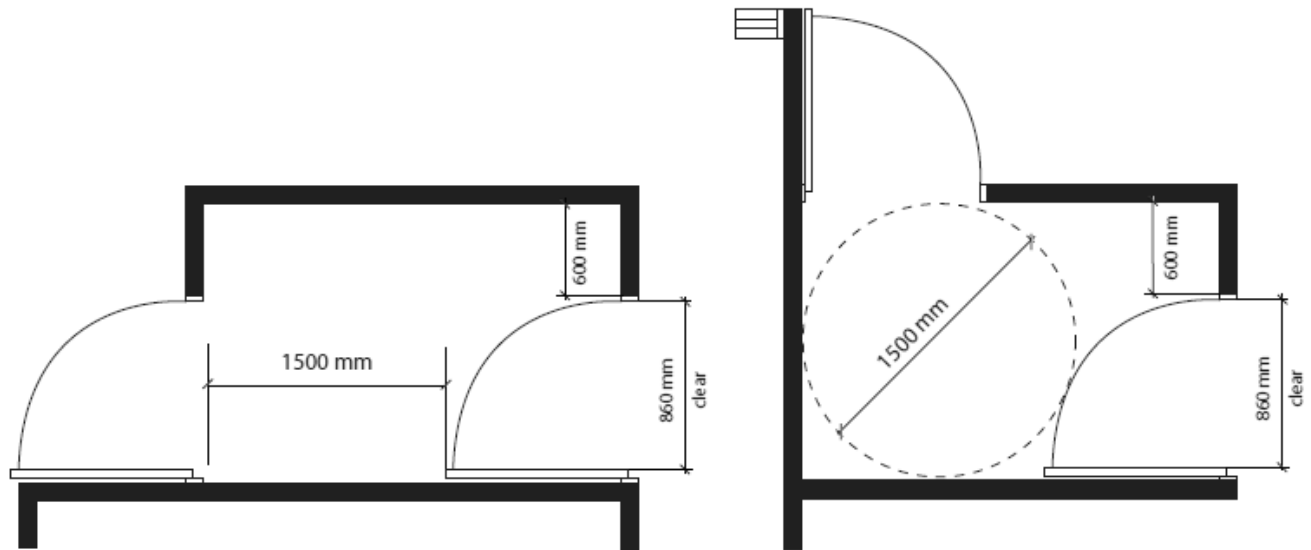


Figure A-3.8.3.3.(11)(b)  
Doors in a Series

**a<sub>2.1</sub> A-3.8.3.3.(17)(c) Vertical Power Door Operators.**

The height range permitted for the location of a power door operators in Subclause 3.8.3.3.(17)(c)(ii) allows for the installation of vertical power door operators, either wall- or floor-mounted, that can be operated by a closed fist, a foot or other pressure anywhere within the height of the door operating device.

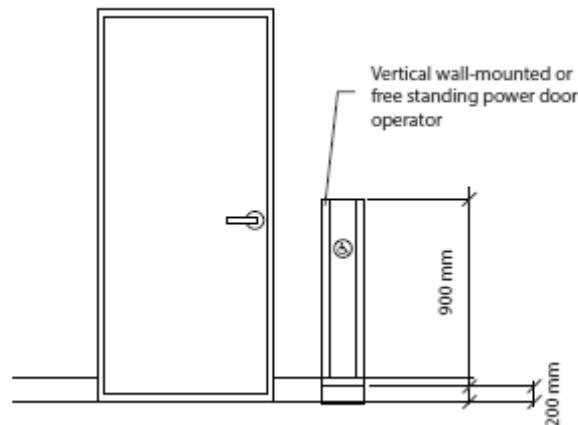


Figure A-3.8.3.3.(17)(c)  
Vertical Power Door Operator

**a<sub>2.1</sub> A-3.8.3.3.(18) Proximity Scanners as Door Operators.**

Where a proximity scanner is utilized it must be set to scan a lower height to ensure that a person using a seated mobility device will trigger the opening of the door.

**a<sub>2.1</sub> A-3.8.3.3.(19)(b) Manual Door Operators.**

The door opening device referred to in Clause 3.8.3.3.(19)(b) is not required to be a power door operator. A manual door opener with lever handles will meet the intent of the Code.

**a<sub>2.1</sub> A-3.8.3.4.(1)(b) Ramp Slopes.**

Although Article 3.8.3.4. permits slopes on ramps as great as 1 in 12 for distances of up to 9 m, gradients of 1 in 20 are safer and less strenuous. When limited space is available, as may be the case during renovations, ramps of up to 1 in 12 should be restricted to lengths not exceeding 3 m whenever possible.

**a<sub>2.1</sub> A-3.8.3.4.(1)(c) Landing Design at Doorways Leading to Ramps.**

A level landing surface at doorways leading to ramps provides a level and stable surface for people using wheeled mobility devices and other mobility aids to stop and manoeuvre clear of the door swing.

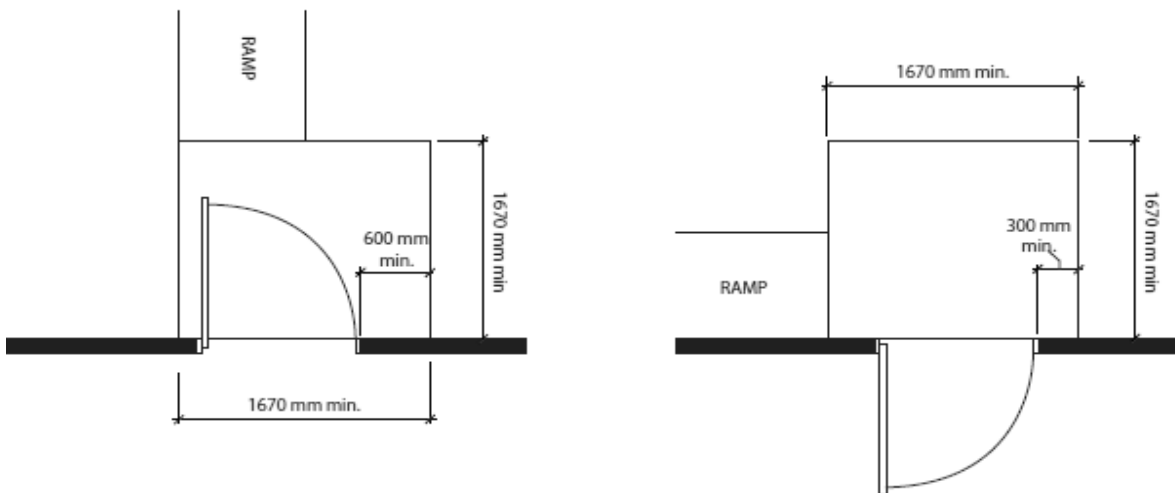


Figure A-3.8.3.4.(1)(c)  
Landing Design at Doorways Leading to Ramps

**a<sub>2.1</sub> A-3.8.3.4.(2) Fixed Seating on Sloped Floors.**

In an assembly room with fixed seating on a sloped floor, such as a theatre, the limitation on floor slope is intended to apply only to the required barrier-free access leading to spaces for persons using wheelchairs described in Sentence 3.8.2.1.(3) and not to aisles and portions of floors serving only fixed seating for ambulatory persons.

**a<sub>2.1</sub> A-3.8.3.4.(3) Sloped Floors.**

A floor with a slope of 1:20 or less need not be designed as a ramp.

**a<sub>2.1</sub> A-3.8.3.6.(1)(c) Locating Wheelchair Spaces, Adaptable and Companion Seating.**

People with disabilities who require either a wheelchair space or an adaptable seat may attend an event with a companion who needs no special seating accommodation. For that reason, the companion seat required beside a wheelchair space is intended to be a standard seat provided for the facility.



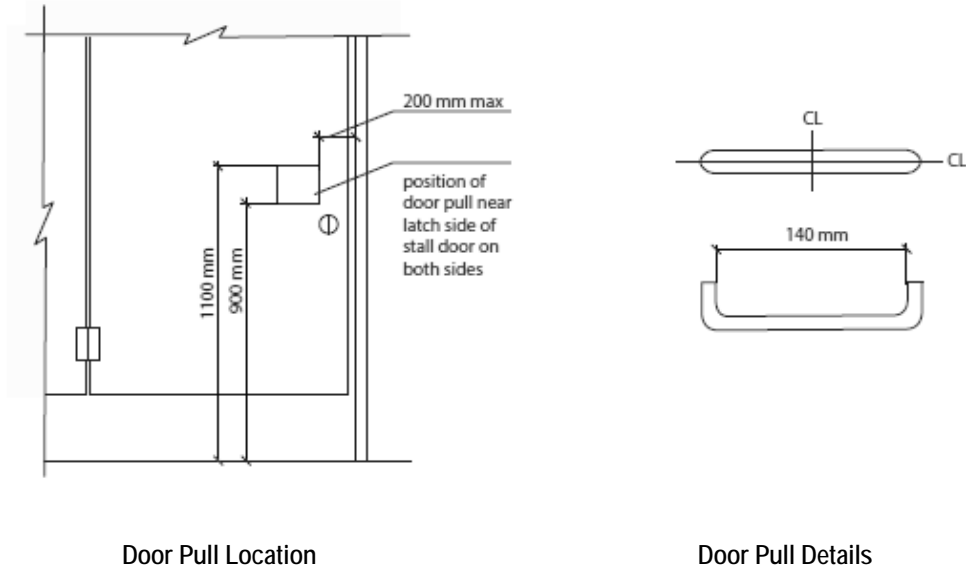


Figure 3.8.3.8.(1)(b)(v)  
Washroom Stall Door Pulls

a<sub>3</sub> **A-3.8.3.8.(1)(f) Washroom Clearances.**

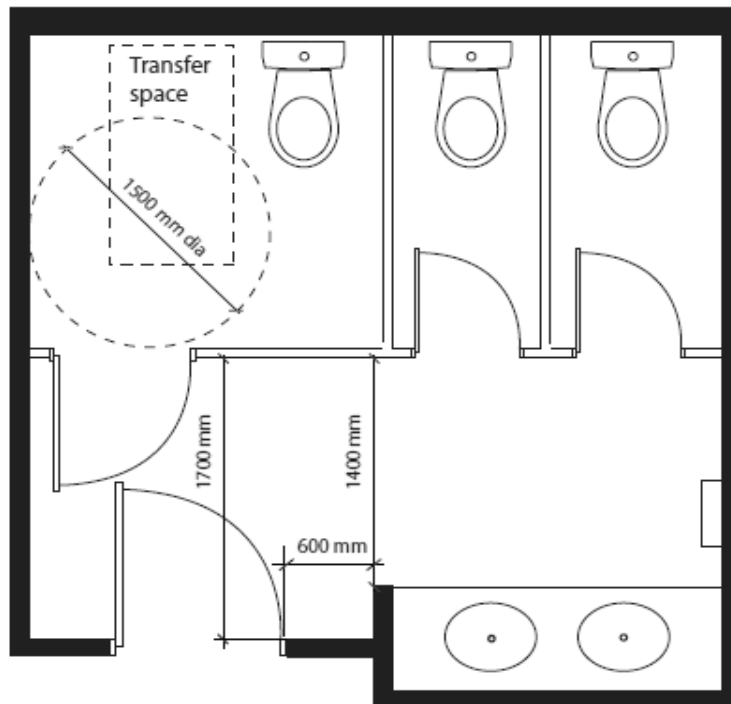


Figure A-3.8.3.8.(1)(f)  
Washroom Clearances

**a<sub>2.1</sub> A-3.8.3.8.(2)(b) Transfer Space on Both Sides of Water Closet.**

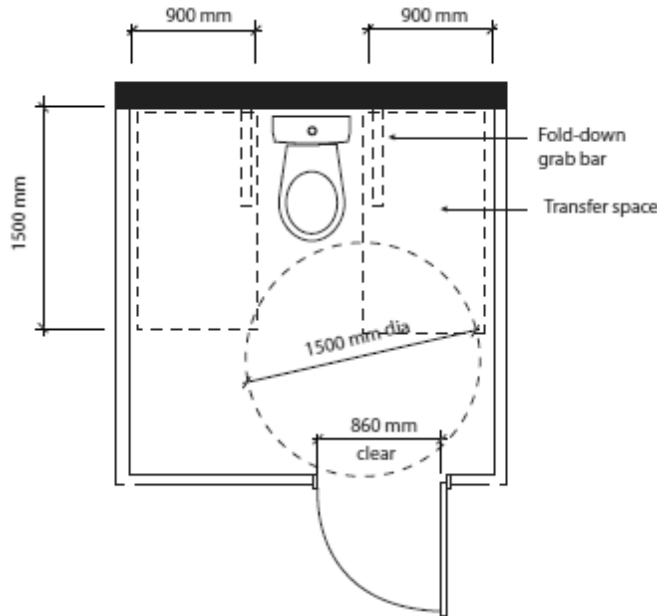


Figure A-3.8.3.8.(2)(b)  
Transfer Space on Both Sides of Water Closet

**a<sub>2.1</sub> A-3.8.3.8.(3) Additional Grab Bars.**

Designers may exceed the minimum requirements found in the Building Code and specify the installation of additional grab bars in other locations. These additional grab bars may be of different configurations and can be installed in other orientations.

**a<sub>3</sub> A-3.8.3.8.(5) L-Shaped Grab Bar.**

L-shaped grab bars provide greater support for people who rely on grab bars to assist them in transferring to and from a standing or seated position. Diagonally mounted grab bars may not be suitable for the downward force necessary for support or for pulling upward. Hands can slip along the bar if it is set in a diagonal position. The use of two straight grab bars located at a 90° angle to one another is not permitted.

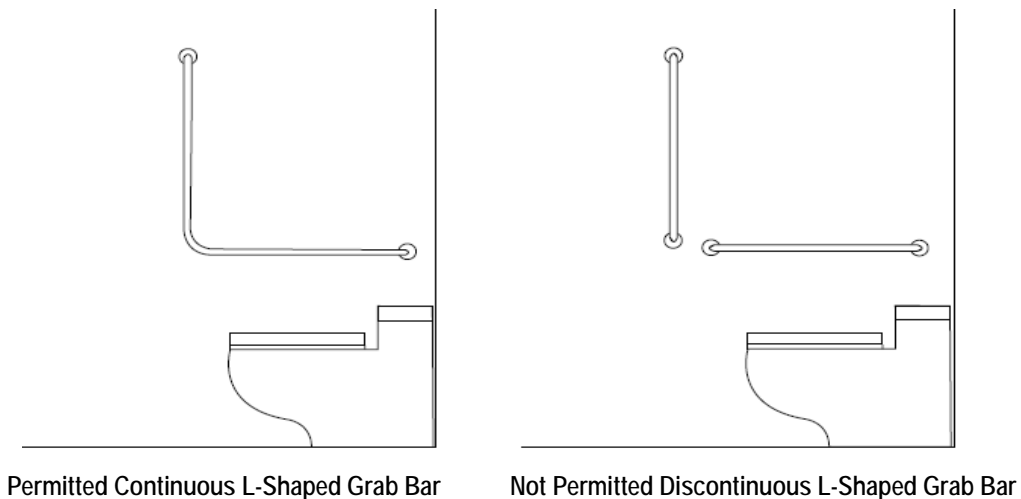


Figure A-3.8.3.8.(5)  
L-Shaped Grab Bar

**a<sub>2.1</sub> A-3.8.3.8.(8) Fold-Down Grab Bars.**

A fold-down grab bar is required to resist a load of 1.3 kN applied either vertically or horizontally and will require blocking in the wall so that the grab bar remains anchored to the wall when in use.

**a<sub>2.1</sub> A-3.8.3.8.(10) Ambulatory Water Closet Stalls.**

An ambulatory water closet stall is designed to accommodate people requiring some mobility assistance using aids such as canes or crutches but who do not use wheelchairs. Ambulatory stalls include features such as a higher water closet seat height, grab bars and some additional space for mobility aids such as a cane. A door pull should be provided on both faces of the stall door.

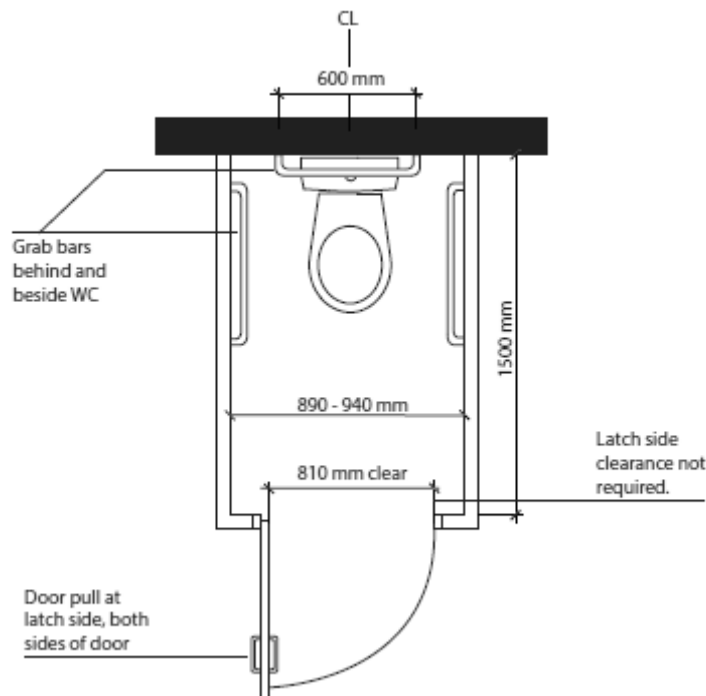


Figure A-3.8.3.8.(10)  
Ambulatory Washroom Stall

**a<sub>3</sub> A-3.8.3.9. Water Closets.**

Article 7.2.2.5. applies to water closets referenced in Articles 3.8.3.8., 3.8.3.9. and 3.8.3.12.

A shelf or projection should not be located behind a water closet such that it could present a hazard.

**a<sub>2.1</sub> A-3.8.3.9.(1)(c) Back Support at Water Closets.**

The purpose of the back support is to reduce the chance of imbalance or injury caused by a user leaning against exposed flush valves or pipes. A toilet seat lid, where provided, may be a suitable back support.

**A-3.8.3.9.(1) Water Closets.**

Wall-mounted water closets or floor models with receding bases are preferable because they provide the least amount of obstruction.

**a<sub>2.1</sub> A-3.8.3.10. Barrier-Free Urinals.**

Where provided, barrier-free urinals require both properly mounted and supported grab bars and privacy screens. Privacy screens alone should not be used as both a privacy and support element.

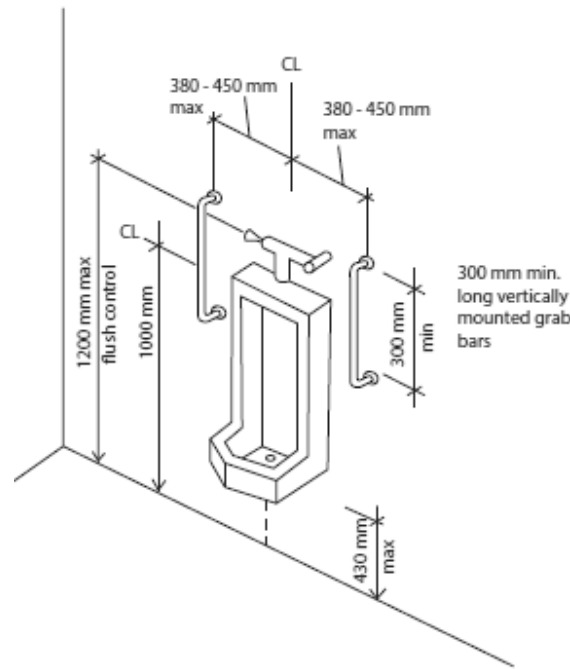


Figure A-3.8.3.10.  
Accessible Urinal

**a<sub>2.1</sub> A-3.8.3.11. Washroom Accessories.**

Washroom accessories for barrier-free water closets and lavatories must be located within arm’s reach of a person in a seated position. Placement of towel dispensers and hand dryers should not require that a person seated in a wheelchair must travel beyond the reach range of the lavatory to dry his or her hands.

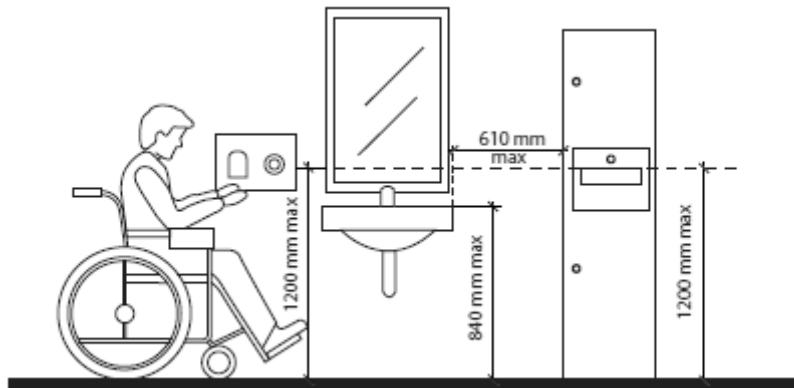


Figure A-3.8.3.11.  
Washroom Accessories

**A-3.8.3.11.(1)(c) Clearances Beneath a Lavatory.**

- a<sub>2.1</sub> Barrier-free lavatories require sufficient knee and toe clearance below to permit a person in a wheelchair to move close enough to the faucet to easily access the water stream.
- a<sub>3</sub> In order to meet the clearances contained in this Clause, and depending on the lavatory to be installed, it may be necessary to install an offset P.O. lavatory drain.

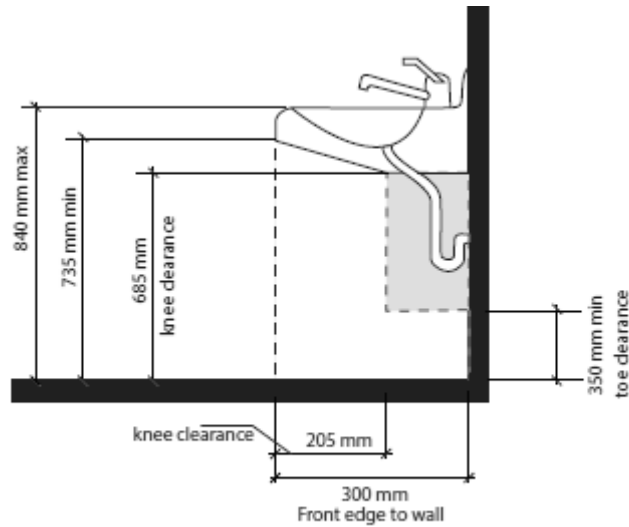


Figure A-3.8.3.11.(1)(c)  
Clearances Beneath a Lavatory

**a<sub>2.1</sub> A-3.8.3.11.(1)(d) Pipe Protection.**

The pipes referred to in Clause 3.8.3.11.(1)(d) include both supply and waste pipes. The hazard can be prevented by insulating the pipes, by locating the pipes in enclosures, or avoided by limiting the temperature of the hot water to a maximum of 43°C.

**a<sub>2.1</sub> A-3.8.3.11.(1)(f) Clear Space at Lavatory.**

The clear space required for the wheelchair user to pull into the fountain may overlap with an adjacent barrier-free path of travel but should not prevent other building users from passing when the barrier-free lavatory is in use.

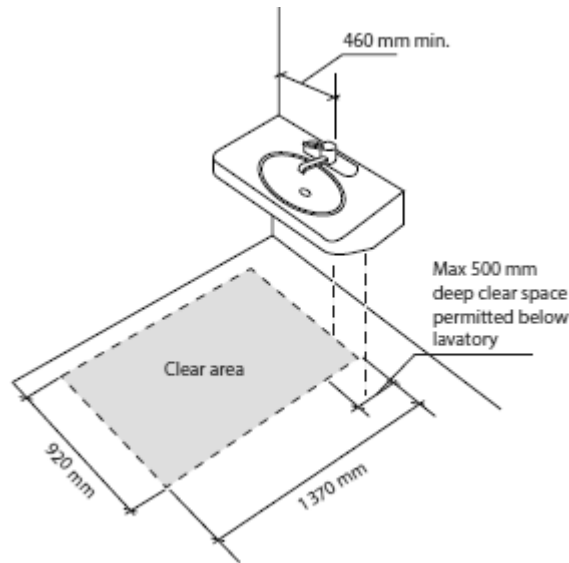


Figure A-3.8.3.11.(1)(f)  
Clear Space at Lavatory

**a<sub>2.1</sub> A-3.8.3.12.(1)(d) Transfer Space.**

The transfer space beside a water closet or the approach space at a lavatory must be a clear space with no obstruction or potential obstruction of the space from adjacent elements such as a fold-down change table, or other fixture. The exception to this would be a fold-down grab bar where provided. If a fold down change table is not returned to the folded up position after use, the next user of the space should not be inconvenienced from using the water closet or lavatory due to the transfer or approach spaces being blocked.

**a<sub>3</sub> A-3.8.3.12.(1) and (3) Universal Washroom.**

Unobstructed areas in front of the lavatory, in front of the water closet and on one side of the water closet are necessary for manoeuvrability of a wheelchair. The door swing may overlap the turning circle within the universal washroom as long as there is sufficient space for a wheelchair user to manoeuvre to clear the door and close the door from a front approach position.

The space for an adult size change table may encroach upon the 1700 mm turning circle only where the change table is movable and is not permanently fixed or stored within the washroom. In that case the table, such as a hospital gurney is brought into the washroom when needed and removed after use. A permanently fixed table may not be appropriate for certain building occupancies due to operational and maintenance considerations.

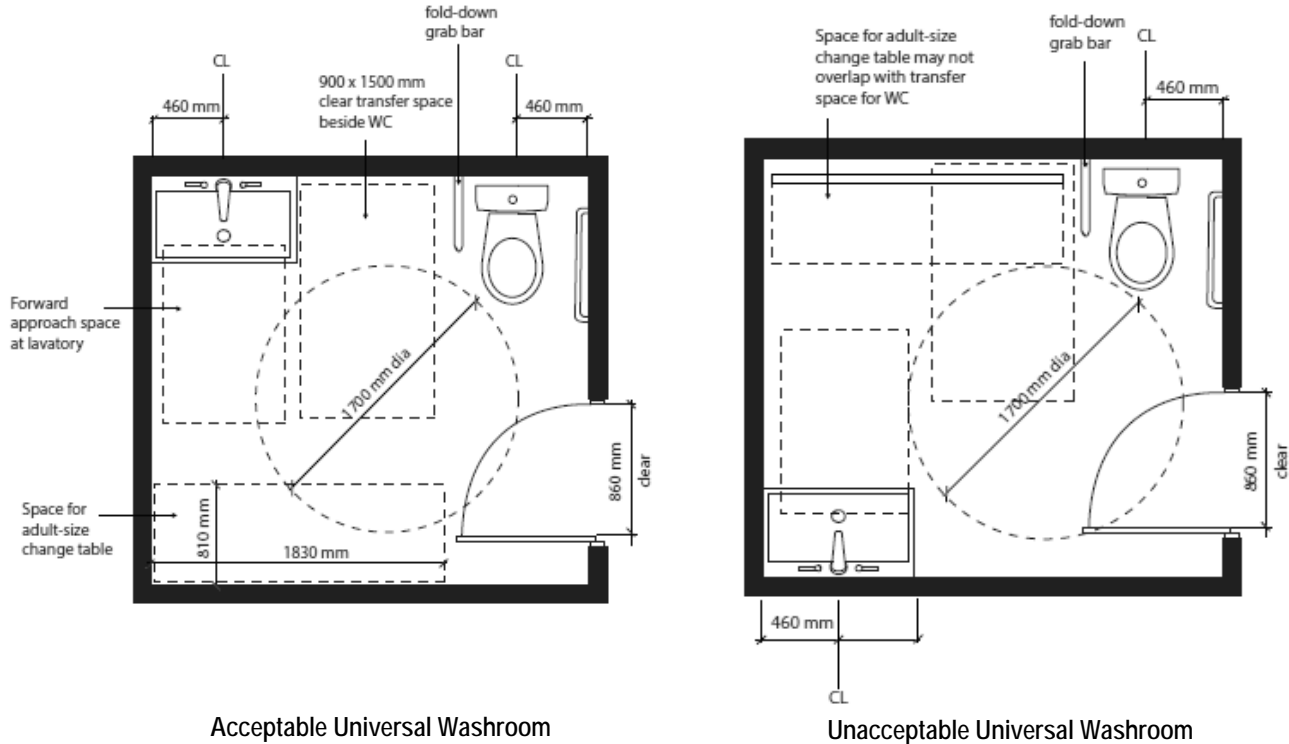


Figure A-3.8.3.12.(1) and (3)  
Universal Washroom

**a<sub>2.1</sub> A-3.8.3.12.(2) Emergency Call System.**

The purpose of the emergency call system is to notify other building occupants that a person using the universal washroom requires assistance. The visual signal and alarm should be different from the building fire and smoke alarms and visual signals, where installed, as this call system is for personal, not building, emergencies.

- a<sub>3</sub> The emergency call button is intended to provide a local visual signal outside of the washroom to alert others that someone in the washroom needs assistance. It is not required to be linked to a central monitoring station. Where central monitoring is not provided, such as in the case of a small building or a standalone washroom in a park, an additional sign informing the washroom users that there is no central monitoring may be appropriate.

a<sub>2.1</sub> **A-3.8.3.12.(6) Universal Washrooms for Small Buildings.**

The permission for a smaller universal washroom to be provided in small buildings recognizes the limited space available for construction of service and amenity spaces while still balancing available space with the needs of people with disabilities.

a<sub>2.1</sub> **A-3.8.3.13.(1) Minimum Number of Barrier-Free Showers.**

The intent of the requirement for one or more barrier-free showers in a group of showers is to address the increased demand for accessible facilities in publicly accessible buildings such as arenas, community recreation centres and private health and fitness facilities where the accessible shower stall is located in the same room as non-accessible showers. It is not the intent of the Code to require single shower stalls or single private use showers that are part of a private office suite to be barrier-free accessible.

**A-3.8.3.13.(2)(b) Clear Space at Entrances to Showers.**

The clear space at the entrance to a shower may be encroached upon by fixtures such as a wall hung sink which does not interfere with the leg rests of the wheelchair. However, this sink could restrict movement for persons who need to make a lateral transfer if it were installed at the seat end of the shower.

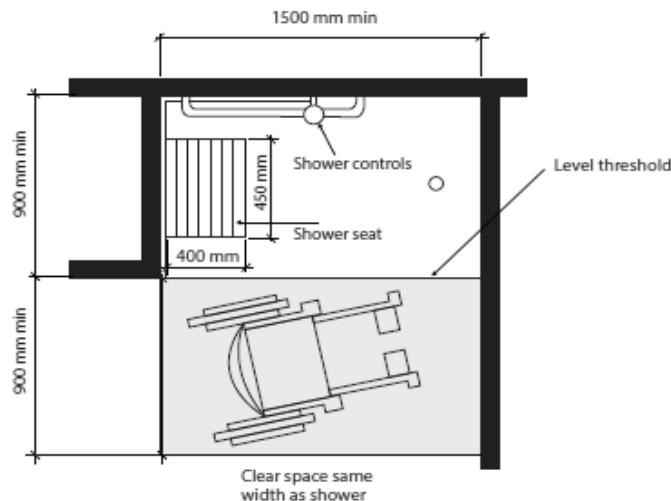


Figure A-3.8.3.13.(2)(b)  
Shower Design

a<sub>2.1</sub> **A-3.8.3.13.(2)(e) and (f) Shower Seat and Grab Bars.**

Only one grab bar is required, to be installed on the wall next to the seat; a grab bar behind the seat prevents the user from leaning against the wall, while one located on the wall opposite the seat cannot be reached from the seated position.

The use of two straight grab bars installed at a 90° angle to one another is not acceptable. The Code requires a continuous L-shaped grab bar. The seat itself may be used in conjunction with the bar for transfer. If design flexibility is required, fold away grab bars may be used as an alternative.

- a<sub>3</sub> A grab bar installed within a barrier-free shower stall on the same wall as the shower controls should have 900 mm long horizontal and vertical components.

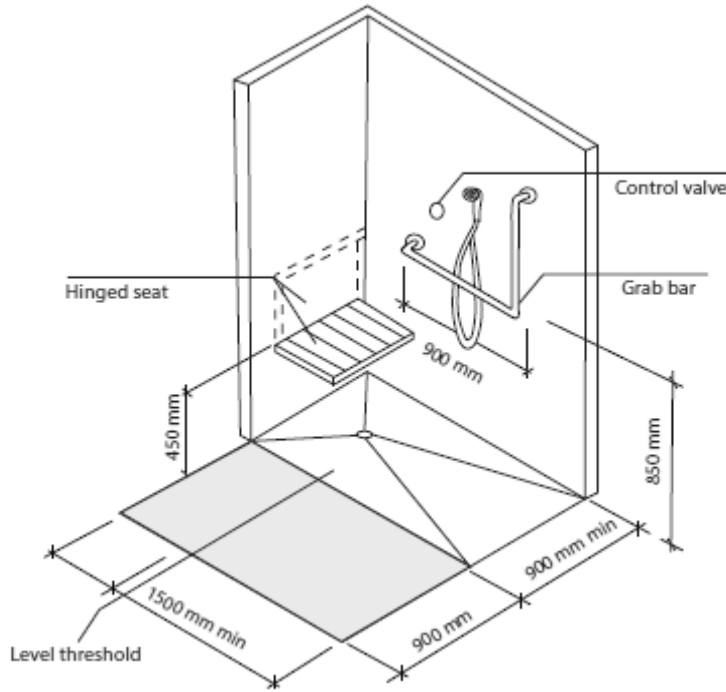


Figure A-3.8.3.13.(2)(e) and (f)  
Accessible Shower

a<sub>2.1</sub> **A-3.8.3.13.(4) Showers and Bathtubs.**

The grab bars and their mounting position must facilitate getting in and out of the bathtub from a seated or standing position, as appropriate, to limit the need for twisting the body.

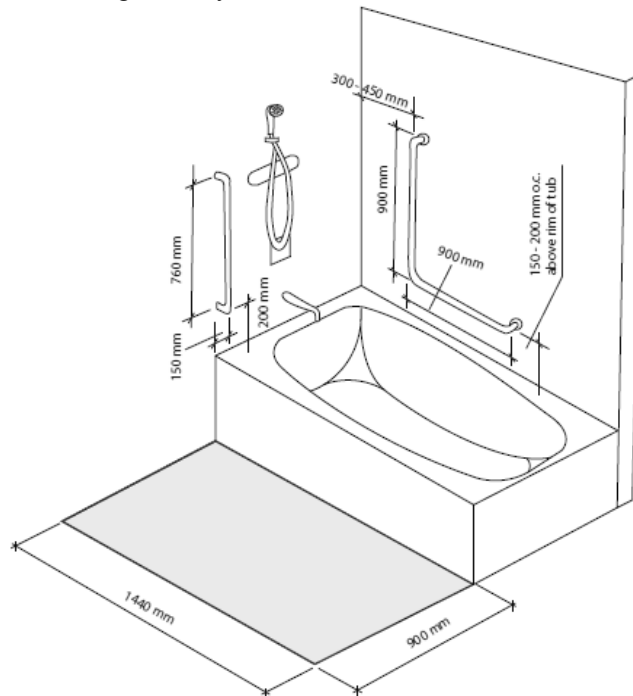
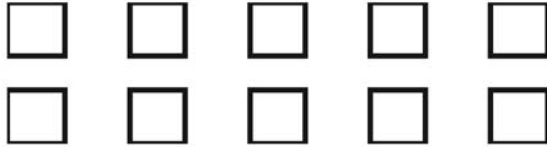


Figure A-3.8.3.13.(4)  
Accessible Bathtub



Case 2



Distance between classrooms: less than 6 m

3.2.2. applies to each classroom

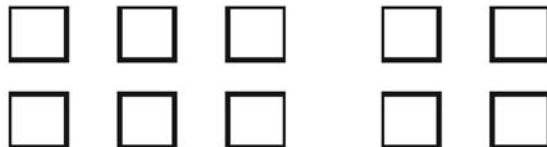
3.2.3. applies to each classroom

i.e. rating and construction of facing walls determined by limiting distance

Extinguisher required

Access; street; hydrant; fire alarm; - not required

Case 3



Distance between classrooms: less than 6 m

No. of classrooms in group: 6 max.

Distance between groups: not less than 12 m

3.2.2. applies to each group

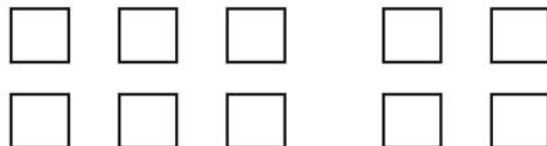
3.2.3. does not apply between classrooms within a group if the facing walls have a rating of 45 min, on the inside

3.2.3. applies between groups

Extinguisher required

Access; street; hydrant; fire alarm - not required

Case 4



Distance between classrooms: less than 6 m

No. of classrooms in group: 6 max.

Distance between groups: not less than 12 m

3.2.2. applies to each group

3.2.3. does not apply between classrooms within a group

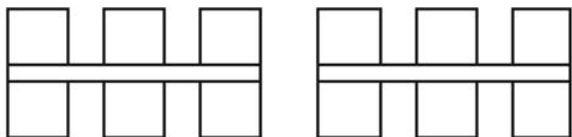
3.2.3. applies between groups

Extinguisher required

Fire alarm required (extension of main system)

Access; street; hydrant; - not required

## Case 5



Distance between classrooms: less than 6 m

No. of classrooms in group: 6 max.

Distance between groups: not less than 12 m

3.2.2. applies to each group

3.2.3. does not apply between classrooms within a group

3.2.3. applies between groups

Extinguisher required

Fire alarm required (extension of main system)

Access; street; hydrant; - not required

All other cases require:

- Fire extinguisher
- Access
- Street
- Hydrant
- Fire alarm: extension of existing system

**a<sub>2.1</sub> A-3.11.3.1.(9)(a) Barrier-Free Path of Travel at Pool Deck.**

The barrier-free path of travel throughout the pool deck area may be included in the 1800 mm wide pool deck space. The width of the barrier-free path of travel must not be reduced where a column or other obstruction interrupts the pool deck space.

**a<sub>2.1</sub> A-3.11.3.1.(14) Tactile Indicator at Pool Deck.**

The tactile indicator at the of the pool deck, signals a warning to people with no or low vision that they have reached the water's edge. The tactile indicator may be built-in or applied but must not present a tripping hazard. The indicator should be a continuous band installed parallel to the outside edge of the gutter around the pool perimeter.

**a<sub>2.1</sub> A-3.11.3.2.(1) Outdoor Pool Deck.**

Where an outdoor pool deck is provided, a barrier-free path that is an exterior walk is required between the building and the outdoor pool, including access from change rooms and showers, and throughout the pool deck area.

**a<sub>2.1</sub> A-3.11.3.3.(4) Pool Lift Space Requirements.**

The clear space required to transfer from a wheelchair to the pool lift may overlap the required barrier-free path of travel within the pool deck.

**a<sub>3</sub> A-3.11.5.1.(8)(b) Ramps into Public Swimming Pools.**

Despite the requirement that the hard surface area piercing the pool deck and leading to a submerged ramp must be at least 750 mm wide, it is recommended that the clear width of the access point to the ramp be at least the same width of the ramp and consistent with Clause 3.8.3.4.(1)(d).

### **A-5.1.4.1. Application of Structural Design to Other Building Elements.**

Part 4, as currently written, applies primarily to buildings as a whole and to structural members. Requirements defining structural loads and design to accommodate or resist those loads, however, apply not only to buildings as a whole and components that are traditionally recognized as structural members, but also apply to other elements of the building that are subject to structural loading. This is addressed to some extent in Part 4 by the requirements that pertain, for example, to wind loads on cladding. A range of structural loads and effects, as defined in Subsection 4.1.2., may be imposed on non-loadbearing elements such as backing walls, roofing, interior partitions and their connections. These must generally be addressed using the same load determination and structural design procedures as used for structural members.

Responsibility for the structural design of buildings as a whole and their structural members is commonly assigned to the designer of record. The application of Part 4 reflects this, and as such, “non-structural” elements are not explicitly identified in the Part 4 provisions. Rather, the application of Part 4 to these elements is specified in cross-references from other Parts of the Code, e.g. Part 5, which recognizes the fact that the structural design of these elements is often carried out by designers other than the designer of record.

Part 4 applies to the design of the connections of building services to address earthquake loads (See Article 4.1.8.17.).

### **A-5.1.4.1.(4) Past Performance as Basis for Compliance with Respect to Structural Loads.**

As discussed in Appendix Note A-5.1.4.1., a range of structural loads and effects can be imposed on materials, components and assemblies in environmental separators and assemblies exposed to the exterior. In many instances, compliance with Sentence 5.1.4.1.(1) for structural loads must be determined based on the loads and calculation methods described in Part 4 as specified in Sentence 5.1.4.1.(2) and the referenced Subsection 5.2.2., e.g. for cladding. In practice, compliance for some materials, components or assemblies of environmental separators and assemblies exposed to the exterior is determined by relying on provisions governing the use of alternative solutions (such as Clause 1.2.1.1.(1)(b) of Division A).

For some very common building elements and installations, however, there is a very large body of evidence of proven performance over a long period of time. In these cases, imposing the degree of analysis, or documentation of performance, required by Part 4 or Section 2.1. of Division C would be unnecessary and onerous. Clause 5.1.4.1.(4)(b) is intended to address these particular cases. Because these common building elements and assemblies are so widely accepted throughout the industry and the body of evidence is so substantial (though not necessarily documented in an organized fashion), detailed analysis or documentation is unnecessary.

Whether compliance of a particular material, component or assembly may be determined based on past performance depends not only on the type of material, component or assembly, but also on its intended function, the particular loads to which it will be subject and the magnitude of those loads. Because the possible number of combinations and permutations is astronomical, only guidelines can be provided as to when past performance is a reasonable basis for determining compliance.

In determining compliance based on past performance, the period of past performance considered should be a substantial number of years. For example, 30 years is often used to do life-cycle cost analysis of the viability of investments in building improvements. This period is more than long enough for most deficiencies to show up. There should be no question as to the structural adequacy of a material, component or assembly that has been successfully used in a given application for such a period.

The determination of compliance may be based on past performance only where the function of the material, component or assembly is identical to that of the materials, components or assemblies used as a reference, and where the expected loads do not exceed those imposed on the reference materials, components or assemblies. For example, the acceptance of gypsum board, and its fastening, to serve as part of the backing wall supporting cladding cannot be based on the performance of gypsum board that has served only as an interior finish.

The determination of compliance may be based on past performance only where the properties of the material, component or assembly are identical or superior to those of the materials, components or assemblies used as a reference. For example, where a component of a certain gauge of a particular metal has provided acceptable performance, the same component made of the same metal or a stronger one would be acceptable.

Compliance with respect to various loads may be determined individually. A particular material may have to be designed to Part 4 to establish acceptable resistance to wind or earthquake loads, for example, but past performance may be adequate to determine that the material and normal fastening will support the material's dead load and will resist loads imposed by thermal and moisture-related expansion and contraction.

Past performance is a reasonable basis for determining compliance for lighter materials, components or assemblies not subject to wind load; for example, semi-rigid thermal insulation installed in wall assemblies where other materials, components or assemblies are installed to resist air pressure loads.

Past performance is an appropriate basis for determining compliance for some smaller elements that will be subject to wind loads but are continually supported or fastened behind elements that are designed for wind loads, for example, standard flashing over wall penetrations.

It should be noted that this particular approach to demonstrating compliance pertains only to the resistance or accommodation of structural loads described in Part 4. The resistance or accommodation of environmental loads, resistance to deterioration, and material compatibility must still be addressed in accordance with Part 5.

### a<sub>3</sub> **A-5.1.4.1.(5)(b) and (c) Accommodating Movement.**

It is well understood that the deflection of the backing assembly in a wall can have significant effects on the performance of the cladding. For example, Clauses 9.14.3 and 10.14.3 of CSA S304.1, "Design of Masonry Structures", specifies the maximum deflection criteria for backing assemblies to masonry veneer. Clauses 5.1.4.1.(5)(b) and (c) are written in very general terms in recognition that not only can the deflection of cladding affect the performance of the backing assembly, but that the excessive deflection of any element has the potential to adversely affect the performance of any adjacent element. Similarly, inter-storey drift has the potential to adversely affect the performance of components and assemblies such as fenestrations. Such effects should be avoided or accommodated.

### **A-5.1.4.2. Deterioration.**

Environmental loads that must be considered include but are not limited to: sound, light and other types of radiation, temperature, moisture, air pressure, acids and alkalis.

Mechanisms of deterioration include:

- structural (impact, air pressure)
- hygrothermal (freeze-thaw, differential movement due to thermal expansion and contraction, ice lensing)
- electrochemical (oxidation, electrolytic action, galvanic action, solar deterioration)
- biochemical (biological attack, intrusion by insects and rodents).

Information on the effects of deformations in building elements can be found in the Commentary entitled "Effects of Deformations in Building Components" in the *User's Guide - NBC 2010, Structural Commentaries (Part 4 of Division B)*.

Resistance to deterioration may be determined based on field performance, accelerated testing or compliance with guidelines provided by evaluation agencies recognized by the authority having jurisdiction.

Building components must be designed with some understanding of the length of time over which they will effectively perform their intended function. Actual service life will depend on the materials used and the environment to which they are exposed. The design should take into consideration these factors, the particular function of the component and the implications of premature failure, the ease of access for maintenance, repair or replacement, and the cost of repair or replacement.

Many buildings are designed such that access for maintenance, repair or replacement is not possible without damaging or seriously risking damaging other building elements. This can become a considerable deterrent to proper maintenance thus compromising the performance of the subject materials, components and assemblies, or other elements of the building. In cases where it is known or expected that maintenance, repair or replacement is likely to be required for certain elements before such time as the building undergoes a major retrofit, special consideration should be given to providing easy access to those elements.

**A-5.5.1.2.(1) Vapour Barrier Materials and Installation.**

In the summer, many buildings are subject to conditions where the interior temperature is lower than the exterior temperature. Vapour transfer during these periods is from the exterior to the interior. In general, in Canada, the duration of these periods is sufficiently short, the driving forces are sufficiently low, and assemblies are constructed such that any accumulated moisture will dissipate before deterioration will occur.

Buildings such as freezer plants, however, may operate for much of the year at temperatures that are below the ambient exterior temperature. In these cases, the “warm” side of the assembly would be the exterior and a detailed analysis on an annual basis is required.

Steady state heat transfer and vapour diffusion calculations may be used to determine acceptable permeance levels for the vapour barrier and to identify appropriate positions for the vapour barrier within the building assembly.

**A-5.6.1.1. Required Protection from Precipitation.**

Windows, cast-in-place concrete walls, and metal and glass curtain wall systems are examples of components and assemblies that, when properly designed and constructed, are expected to prevent the ingress of precipitation into a building. Assemblies such as roofs and veneer walls consist of materials specifically intended to screen precipitation.

Components and assemblies separating interior conditioned space from the exterior are generally required to provide protection from the ingress of precipitation. Components and assemblies separating interior unconditioned space from the exterior may or may not be required to provide protection from the ingress of precipitation. Buildings such as stadia, parking garages and some seasonally occupied buildings, for example, may not require complete protection from the ingress of precipitation. The degree of protection will depend to a large extent on the materials selected for the building elements that will be exposed to precipitation.

The word “minimize” is used in Sentence 5.6.1.1.(1) because not all moisture ingress or accumulation in an assembly need be of concern. The penetration of wind-driven rain past the cladding may not affect the long-term performance of the assembly, provided the moisture dries out or is drained away before it initiates any deterioration of building materials. When the design service life of a material or component is longer than the design service life of the overall assembly, taking into account the expected exposure to moisture, initiating deterioration of the material should not be of concern. That is to say, provided the material or component continues to provide the necessary level of performance for its intended service life and does not adversely affect the service life of the assembly of which it is a part, the deterioration of the material or component is not an issue.

**A-5.6.1.2.(3) Ice Damming.**

Water leakage through sloped roofs is often due to the formation of ice dams at the eaves, which can be limited by controlling the transfer of heat to the roof through a combination of insulation and venting to dissipate heat. See Subclause 5.3.1.2.(1)(a)(iv).

**A-5.6.2.1. Sealing and Drainage.**

Providing a surface-sealed, durable, watertight cover on the outside of a building is difficult. Where there is a likelihood of some penetration by precipitation into a component or assembly, drainage is generally required to direct the moisture to the exterior.

- a<sub>3</sub> The degree of protection against precipitation ingress needed in any particular case and the approach taken to provide that protection will depend on factors such as,
- the exterior loads imposed on the assembly,
  - the materials selected for the backing assembly,
  - the use of the enclosed space, and
  - the level of maintenance that will be acceptable to the owners.
- a<sub>3</sub> Where exterior loads are greater, it may be prudent to select a precipitation protection system whose small potential failures will not be as likely to have an immediate impact on the building or its occupants. For example, drained and vented assemblies are typical for low-rise residential buildings. More robust drained and vented assemblies are recommended for mid- and high-rise buildings where the cost of maintenance and repair could be high.

Where materials with a greater resistance to moisture are used in the assembly, a less rugged precipitation protection system or a less rigorous maintenance schedule may be acceptable. This might be the case, for example, where the wall or backing wall is concrete or masonry.

- a<sub>3</sub> For spaces that are not intended for on-going human occupancy, some rainwater leakage may be of lesser concern. This may be the case for certain warehouse spaces for example, depending on how the spaces are used and conditioned.

Information on the installation of flashing to drain water to the exterior of roof and wall assemblies may be found in a number of publications including, but not limited to:

- "Architectural Sheet Metal Manual", Sheet Metal and Air-Conditioning Contractors National Association, Inc.
  - "High-Rise Residential Construction Guide", Tarion Warranty Corporation (formerly Ontario New Home Warranty Program)
  - Technical Notes, National Concrete Masonry Association
  - Roofing Specifications, Canadian Roofing Contractors' Association
  - "Roofing Manual: Membrane Roof Systems" and "Waterproofing Manual", National Roofing Contractors Association
  - Technical Notes on Brick Construction, Brick Industry Association
- a<sub>3</sub> As a consequence of increased building height, wood construction buildings exceeding 4 storeys may experience increased loadings on environmental separators and may require different design considerations than common approaches used by industry for buildings of 4 storeys or less. These considerations include but are not limited to, the following:
- air barrier assemblies,
  - fenestration selection,
  - protection from precipitation,
  - differential movement due to wood shrinkage,
  - roofing selection and design, and
  - risk of deterioration due to longer exposure of materials to the elements during construction.

#### **A-5.8.1.1.(1) Required Drainage.**

A wall or floor located below the water table or in the path of a watercourse will be subject to continuous hydrostatic pressure. In such cases, the provision of drainage will be ineffective and the wall or floor must be made waterproof to prevent water ingress.

Where a wall or floor is subject to intermittent hydrostatic pressure, as may result from seasonal flooding, proper drainage will facilitate the drying out of the soil. In some cases, reducing exposure to high moisture levels will extend the life of the moisture protection.

Where a wall or floor is not subject to hydrostatic pressure, drainage again reduces the exposure to high moisture levels and allows less than waterproof treatment of the wall or floor.

#### **A-5.8.2. Moisture Protection.**

Moisture protection for building elements in contact with the ground is generally categorized as either waterproofing or dampproofing. Waterproofing provides a continuous protection against water ingress and is intended to resist hydrostatic load. Dampproofing, on the other hand, does not provide a seal against water ingress and cannot withstand hydrostatic pressure.

In general, Part 5 requires walls, floors and roofs in contact with the ground to be waterproofed. Properties of waterproofing are specified in Sentences 5.8.2.2.(2) to (5), and waterproofing material standards are referenced in Table 5.10.1.1. Materials intended to be used as dampproofing rather than waterproofing are generally not permitted [Sentence 5.8.2.2.(6)]. Standards for installing waterproofing are also specified [Sentence 5.8.2.3.(1)].

Part 5 permits the use of dampproofing in lieu of waterproofing where the substrate is cast-in-place concrete, a drainage layer is installed and where the assembly will not be exposed to hydrostatic pressure. Material standards are referenced in Clause 5.8.2.2.(7)(b) and installation methods in Sentence 5.8.2.3.(2).

### **A-5.8.2.1. Required Moisture Protection.**

The control of the ingress of moisture from the ground into interior space is not related to the type of building, the use of the space, or whether or not the space is conditioned. This recognizes the potential adverse effects of high humidity levels, with or without standing water, on both the health of the building occupants and the durability of the building structure.

Although a subject interior space may not be occupied, the assembly separating this space from occupied space often cannot be relied upon to provide adequate protection for the building occupants. Depending on the construction of the separating assembly, it may also be subject to moisture-related deterioration.

The exceptions to this requirement stated in Sentence 5.8.2.1.(2) recognize only those cases where the subject interior space is not occupied and where the assembly separating this space from occupied space will provide the required protection and be resistant to a high humidity environment, or where the moisture loads are sufficiently limited as to not adversely affect the building or its occupants.

### **A-5.8.2.2.(7) Drainage Layers.**

Drainage layers reduce both structural and moisture loading on the building envelope by breaking capillary flow and allowing water to percolate quickly to the drainage system. A drainage layer may consist of permeable materials including granular backfill, geosynthetic drainage products or mineral fibreboard with oriented fibres to facilitate drainage. Where a granular material is used, it should be protected from contamination by fines from the adjacent native soil or additional material should be installed to ensure that an adequate thickness of the granular material remains free of fines.

### **A-5.9. Required Protection from Noise.**

Sentence 5.9.1.2.(1) applies to the separation of dwelling units from other dwelling units with regard to sound transmission irrespective of Clause 5.1.2.1.(1)(b), which deals with the separation of dissimilar environments. It is understood that, at any time, there is the potential for sound levels to be quite different in adjoining dwelling units.

#### **A-5.9.1.1.(1) Sound Transmission.**

The Tables in MMAH Supplementary Standard SB-3 provide information on the typical sound transmission class ratings of a number of building assemblies. In the absence of test information or results for a specific assembly of materials, the values in these Tables are considered to satisfy the intent of Sentence 5.9.1.1.(1).

#### **A-5.10.1.1.(1) Selection of Materials and Components and Compliance with Referenced Standards.**

Note that Sentence 5.10.1.1.(1) is drafted in such a way that the selection of materials and components is not limited to those traditionally recognized as serving particular functions or those for which a standard is identified in Table 5.10.1.1. This approach permits more flexibility than is provided by similar requirements in Part 9. As long as the selected material meets the performance requirements stated elsewhere in Part 5, the material may be used to serve the required function. However, where the selected material or component, or its installation, falls within the scope of any of the standards listed in Table 5.10.1.1., the material, component or installation must comply with that standard. For example, if some resistance to heat transfer is required between two interior spaces and standard partition construction will provide the necessary resistance, the installation of one of the “thermal insulation” materials identified in the standard list is not required. If, on the other hand, one decides to install glass fibre insulation, the material must conform to CAN/ULC-S702, “Mineral Fibre Thermal Insulation for Buildings”.

#### **A-Table 5.10.1.1. Selection and Installation of Sealants.**

Analysis of many sealant joint failures indicates that the majority of failures can be attributed to improper joint preparation and deficient installation of the sealant and various joint components. The following ASTM guidelines describe several aspects that should be considered when applying sealants in unprotected environments to achieve a durable application:

- ASTM C 1193, “Use of Joint Sealants”,
- ASTM C 1299, “Selection of Liquid-Applied Sealants”,
- ASTM C 1472, “Calculating Movement and Other Effects When Establishing Sealant Joint Width”.

The sealant manufacturer’s literature should always be consulted for recommended procedures and materials.

**A-5.10.2.1.(3) Airtightness and Watertightness of Wired Glass Windows.**

Fixed wired glass assemblies are sometimes permitted as closures in vertical fire separations. The airtightness and watertightness requirements are waived for these windows when used in such an application, in recognition of the fact that the availability of assemblies that meet both the requirements of the window standards and the requirements for fire resistance may be limited. However, control of air and water leakage should not be ignored: measures should be taken to attempt to comply with applicable requirements.

**A-5.10.2.2. Manufactured Windows, Doors and Skylights.****Design Values**

CSA A440S1 requires that the individual performance levels achieved by the product for structural resistance, water penetration resistance and air leakage resistance be reported on the product's performance label.

**Storm Doors and Windows**

Where storm doors and storm windows are not incorporated in a rated window or door assembly, they should be designed and constructed to comply with the applicable requirements of Part 5 regarding such properties as appropriate air leakage and structural loads.

**Forced Entry Test**

Even though the performance label on rated windows, doors and skylights does not explicitly indicate that the product has passed the forced entry resistance test, products are required to pass this test in order to be rated.

**A-5.10.2.4.(3) Heat Transfer through Fire-Rated Glazed Assemblies.**

Thermal bridging through fire-rated glazed assemblies should not be ignored; measures should be taken to minimize condensation consistent with the intent of Sentence 5.10.2.4.(2).

**A-6 Crawl Spaces Used as Warm Air Plenums.**

The requirements for crawl spaces used as warm air plenums have not been included in this Part. Crawl spaces may be used as warm air plenums if design measures are taken to prevent moisture, soil or radon gases from entering the crawl space and being distributed throughout the space.

**A-6.1.1.1.(2) Repairs and Alterations.**

This requirement is to ensure that minimum life safety and health requirements are maintained when the operation and/or design is modified on existing heating, ventilating or air-conditioning systems. For example, this provision would apply to such cases as

- (a) the conversion of a heating appliance from oil to gas where venting and clearance requirements differ for chimneys and
- (b) the branching of a new duct from a main supply duct in which the new duct now penetrates a fire separation.

**A-6.2.1.3. Structural Movement.**

This Article is intended to remind designers and installers of mechanical systems of one aspect of the "good engineering practice" referred to in Article 6.2.1.1. In determining how to accommodate structural movement, there are two important principles to bear in mind:

- The prime concern of the Code is the safety of people in and around the building, as opposed to protection of the mechanical systems and equipment.
- The nature of the accommodation will vary with the type of movement being considered, taking into account particularly how often the movement is likely to be encountered over the life of the building.



Additional treatment options that are available in this standard, but are not currently required by the Building Code, are as follows:

Class of Treatment	Fecal Coliforms or E. Coli (CFU/100 mL) <sup>(1)</sup>
D-I	50 000
D-II	200
D-III	ND <sup>(2)</sup>

Notes to Table:

(1) Maximum concentration in CFU/100 mL based on 30 day average.

(2) ND means non-detectable (median < 10 CFU/100 mL)

Class of Treatment	Total Phosphorus <sup>(1)</sup> , mg/L	Total Nitrogen Reduction
P-I	1.0	—
P-II	0.30	—
N-I	—	50%
N-II	—	75%

Notes to Table:

(1) Maximum concentration in mg/L based on 30 day average.

#### **A-8.6.2.2.(5) Other Treatment Units.**

The temperature options that apply to the testing of treatment units are as follows:

Clause (a) is a non-controlled temperature.

Clause (b) is controlled temperature so that the influent wastewater is heated to  $11^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , whenever necessary to assure a minimum temperature of  $10^{\circ}\text{C}$ . This temperature is the typical temperature at the outlet of the septic tank and, as well, it is required for testing nitrogen reduction treatment technologies.

#### **A-8.7.4.2.(1) Fill Material.**

Any leaching bed fill added to meet the requirements of 8.7.4.2.(1) shall be regarded as part of the sewage system and this fill must be contained on the lot or parcel of land in which the sewage system is located.

#### **A-8.7.5.3.(2) Spacing of Distribution Pipes.**

In order to evenly apply the effluent when a filter bed is used, the maximum spacing of distribution pipes should not be greater than 1.2 m.

#### **A-8.7.6.1. Trench Construction.**

Care must be taken when constructing a shallow buried trench system. Soils have to be dry and protected to ensure smearing of the trench does not take place. If smearing does take place additional measure will need to be undertaken to ensure that the permeability of the soil is not affected in the trench.

**a<sub>3</sub> A-8.7.7.1.(5) Extension of Sand Layer.**

Where the underlying soil has a percolation time greater than 15 minutes, Sentence (5) requires the sand layer described in Sentence (4) be extended 15 m beyond the perimeter of the treatment unit in any direction that the effluent may move horizontally. Consideration may be given to whether the top 300 mm of native soil has the properties required in Sentence (4) prior to removing the existing soil and replacing with sand.

This would also apply to the additional loading area required in Clause (5)(b) of QT/400.

**a<sub>3</sub> A-8.7.7.1.(8) Open Bottom Treatment Units.**

Where an open bottom treatment unit is used in conjunction with a Type A dispersal bed, the placement of the unit is important to achieve even distribution and consideration may be given to the following:

- 1) the treatment unit is placed in the centre of the stone layer where the topography is flat, or
- 2) uphill of the centre of the stone layer on sloping topography.

**A-8.7.8.3. Type B Dispersal Beds.**

The design of a Type B dispersal bed may be based on the use of Table 2-8 of the BCMOH Sewerage System Standard Practice Manual. The Building Code requires the effluent to be of Level IV effluent for a Type B dispersal bed. The loading rates to be used pertain to Type 2 effluent within Table 2-8. The percolation time given in this Table is in min/2.54 cm (inch) not min/cm and must be converted by dividing by 2.54.

**A-9.1.1.9. Factory-Built Buildings.**

Manufactured buildings intended for residential occupancy must comply with all appropriate Code requirements. Only those building components that are designed and constructed in manufacturing plants in accordance with the specified standards (CSA Z240.2.1 and CSA A277) are deemed to comply with the Code. Building components designed and constructed outside the place of manufacture (e.g. masonry chimneys, basement stairs, foundations, etc.) must conform to the requirements of the Code. The Code also applies to the site installation of manufactured buildings in terms of tie-down, spatial separation, grading, plumbing connections to street services, etc.

CSA standard CSA A277, "Procedures for Factory Certification of Buildings", describes a procedure whereby an independent certification agency can review the quality control procedures of a housing factory and make periodic, unannounced inspections of its products and thus, through suitable labelling, provide assurance to authorities at the final site that the components that cannot be inspected on site comply with the code indicated on the label. It is not a building code, only a procedure for certifying compliance of factory-built components with a building code or other standard. If a factory-built house bears the label of a credible certification agency indicating that compliance with the National Building Code has been certified using the A277 procedure, the accepting authority will have some assurance that the hidden components do not need to be inspected again on site.

**A-9.3.2.1.(1) Grade Marking of Lumber.**

Lumber is generally grouped for marketing into the species combinations contained in Table A-9.3.2.1.(1)A. The maximum allowable spans for those combinations are listed in the span tables for joists, rafters and beams. Some species of lumber are also marketed individually. Since the allowable span for the northern species combination is based on the weakest species in the combination, the use of the span for this combination is permitted for any individual species not included in the Spruce-Pine-Fir, Douglas Fir-Larch and Hemlock-Fir combinations.

Facsimiles of typical grade marks of lumber associations and grading agencies accredited by the Canadian Lumber Standards (CLS) Accreditation Board to grade mark lumber in Canada are shown in Table A-9.3.2.1.(1)B. Accreditation by the CLS Accreditation Board applies to the inspection, grading and grade marking of lumber, including mill supervisory service, in accordance with CSA O141, “Softwood Lumber”. The grade mark of a CLS accredited agency on a piece of lumber indicates its assigned grade, species or species combination, moisture condition at the time of surfacing, the responsible grader or mill of origin and the CLS accredited agency under whose supervision the grading and marking was done.

Table A-9.3.2.1.(1)A.  
Species Designations and Abbreviations






Commercial Designation of Species or Species Combination	Abbreviation Permitted on Grade Stamps	Species Included
Douglas Fir — Larch	D Fir — L (N)	Douglas Fir, Western Larch
Hemlock — Fir	Hem — Fir (N)	Western Hemlock, Amabilis Fir
Spruce — Pine — Fir	S — P — F or Spruce — Pine — Fir	White Spruce, Engelmann Spruce, Black Spruce, Red Spruce, Lodgepole Pine, Jack Pine, Alpine Fir, Balsam Fir
Northern Species	North Species	Any Canadian softwood covered by the NLGA Standard Grading Rules

Canadian lumber is graded to the NLGA Standard Grading Rules for Canadian Lumber, published by the National Lumber Grades Authority. The NLGA rules specify standard grade names and grade name abbreviations for use in grade marks to provide positive identification of lumber grades. In a similar fashion, standard species names or standard species abbreviations, symbols or marks are provided in the rules for use in grade marks.

Grade marks denote the moisture content of lumber at the time of surfacing. “S-Dry” in the mark indicates the lumber was surfaced at a moisture content not exceeding 19%. “MC 15” indicates a moisture content not exceeding 15%. “S-GRN” in the grade mark signifies that the lumber was surfaced at a moisture content higher than 19% at a size to allow for natural shrinkage during seasoning.

Each mill or grader is assigned a permanent number. The point of origin of lumber is identified in the grade mark by use of a mill or grader number or by the mill name or abbreviation. The CLS certified agency under whose supervision the lumber was grade marked is identified in the mark by the registered symbol of the agency.

Table A-9.3.2.1.(1)B.  
Facsimiles of Grade Marks Used by Canadian Lumber Manufacturing Associations and Agencies  
Authorized to Grade Mark Lumber in Canada

Facsimiles of Grade Mark	Association or Agency
	<p>Alberta Forest Products Association 500—10709 Jasper Avenue Edmonton, Alberta T5J 3N3 <a href="http://www.albertaforestproducts.ca">www.albertaforestproducts.ca</a></p>
	<p>Canadian Mill Services Association #200, 601—6th Street New Westminster, British Columbia V3L 3C1 <a href="http://www.canserve.org">www.canserve.org</a></p>
	<p>Canadian Softwood Inspection Agency Inc. 1047—250A Street Aldergrove, British Columbia V4W 2S8</p>
	<p>Central Forest Products Association Inc. c/o Reimer &amp; Co., Chartered Accountants PO Box 146 Swan River, Manitoba R0L 1Z0</p>
	<p>Council of Forest Industries Southern Region: 360—1855 Kirschner Road Kelowna, British Columbia V1Y 4N7 Northern Region: 400—1488 Fourth Avenue Prince George, British Columbia V2L 4Y2 <a href="http://www.cofi.org">www.cofi.org</a></p>

### A-9.8.7.5.(2) Handrail Sections.

Handrails are intended to provide guidance and support to stair users. To fulfil this intent, handrails must be “graspable”. Acceptable handrail sections include, but are not limited to, those shown in Figure A-9.8.7.5.(2).

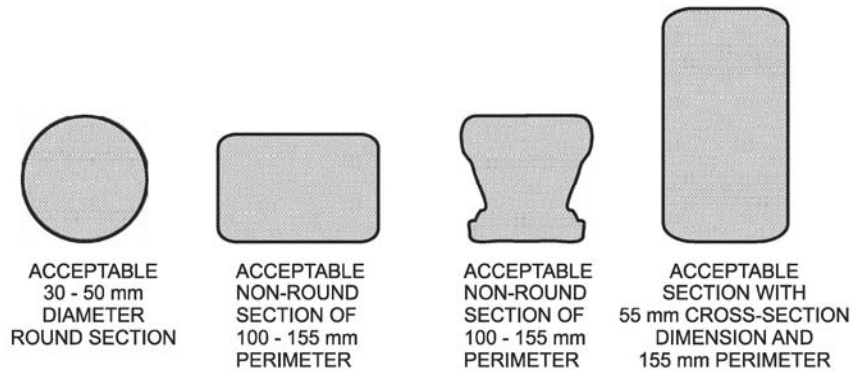


Figure A-9.8.7.5.(2)  
Handrail Sections

### A-9.8.7.7. Attachment of Handrails.

Handrails are intended to provide guidance and support to the stair user and to arrest falls. The loads on handrails may therefore be considerable. The attachment of handrails serving a single dwelling unit may be accepted on the basis of experience, structural design, or the prescriptive requirements of Sentence 9.8.7.7.(2).

### A-9.8.8.1. Required Guards.

The requirements relating to guards stated in Part 9 are based on the premise that, wherever there is a difference in elevation of 600 mm or more between two floors, or between a floor or other surface to which access is provided for other than maintenance purposes and the next lower surface, the risk of injury in a fall from the higher surface is sufficient to warrant the installation of some kind of barrier to reduce the chances of such a fall. A wall along the edge of the higher surface will obviously prevent such a fall, provided the wall is sufficiently strong that a person cannot fall through it. Where there is no wall, a guard must be installed. Because guards clearly provide less protection than walls, additional requirements apply to guards to ensure that a minimum level of protection is provided. These relate to the characteristics described in notes A-9.8.8.3., A-9.8.8.5.(1) and (2), A-9.8.8.5.(3) and A-9.8.8.6.

Examples of such surfaces where the difference in elevation could exceed 600 mm and consequently where guards would be required include, but are not limited to, landings, porches, balconies, mezzanines, galleries, and raised walkways. Especially in exterior settings, surfaces adjacent to walking surfaces, stairs or ramps often are not parallel to the walking surface or the surface of the treads or ramps. Consequently, the walking surface, stair or ramp may need protection in some locations but not in others. (See Figure A-9.8.8.1.) In some instances, grades are artificially raised close to walking surfaces, stairs or ramps to avoid installing guards. This provides little or no protection for the users. That is why the requirements specify differences in elevation not only immediately adjacent to the construction but also for a distance of 1 200 mm from it by requiring that the slope of the ground be within certain limits. (See Figure A-9.8.8.1.)

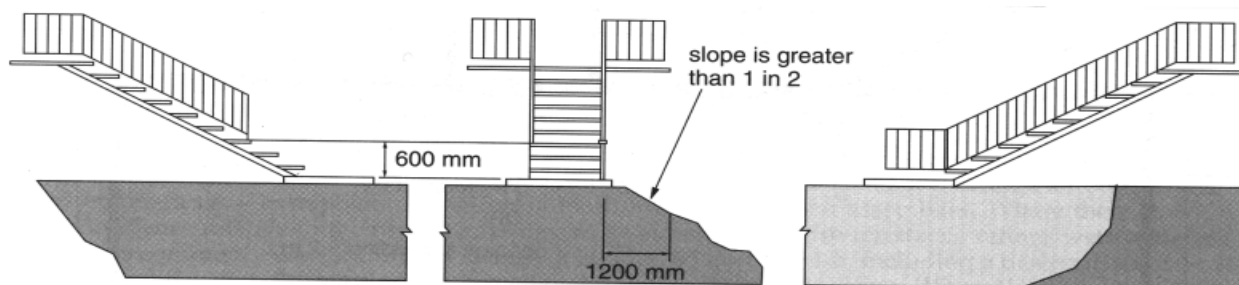


Figure A-9.8.8.1.  
Required Locations of Guards

### A-9.8.8.1.(5) Height of Window Sills Above Floors or Ground.

The primary intent of the requirement is to minimize the likelihood of small children falling significant heights from open windows. Reflecting reported cases, the requirement applies only to dwelling units and generally those located on the second floor or higher of residential or mixed use buildings where the windows are essentially free-swinging or free-sliding.

Free-swinging or free-sliding means that a window that has been cracked open can be opened further by simply pushing on the openable part of the window. Care must be taken in selecting windows, as some with special operating hardware can still be opened further by simply pushing on the window.

- a<sub>3</sub> Casement windows with crank operators could, in some cases, be considered to conform to Clause (1)(b). To provide additional safety, where slightly older children are involved, occupants can easily remove the crank handles from these windows. Awning windows with scissor hardware, however, may not keep the window from swinging open once it is unlatched. Hopper windows would be affected only if an opening is created at the bottom as well as at the top of the window. The requirement will impact primarily on the use of sliding windows which do not incorporate devices in their construction that can be used to limit the openable area of the window.
- a<sub>3</sub> The 100 mm opening limit is consistent with widths of openings that small children cannot fall through. Again, care must be taken in selecting a window. At some position, scissor hardware on an awning window may break up the open area such that there is no unobstructed opening with dimensions greater than 100 mm. At another position, however, though the window is not open much more, the hardware may not adequately break up the opening. The 480 mm height off the floor recognizes that furniture is often placed under windows and small children are often good climbers.

### A-9.8.8.2. Loads on Guards.

Guards must be constructed so as to be strong enough to protect persons from falling under normal use. Many guards installed in dwelling units or on exterior stairs serving one or two dwelling units have demonstrated acceptable performance over time. The loading specified in the first row of Table 9.8.8.2. is intended to be consistent with the performance provided by these guards. Guards constructed in accordance with MMAH Supplementary Standard SB-7 are deemed to meet the requirements of Article 9.8.8.2.

The load on guards within dwelling units, or on exterior guards serving not more than two dwelling units, is to be imposed over an area of the guard such that, where standard balusters are used and installed at the maximum 100 mm spacing permitted for required guards, 3 balusters will be engaged. Where the balusters are wider, only two may be engaged unless they are spaced closer together. Where the guard is not required, and balusters are installed more than 100 mm apart, fewer balusters may be required to carry the imposed load.

### A-9.8.8.3. Minimum Heights.

Guard heights are generally based on the waist heights of average persons. Generally, lower heights are permitted in dwelling units because the occupants become familiar with the potential hazards, and situations which lead to pushing and jostling under crowded conditions are less likely to arise.

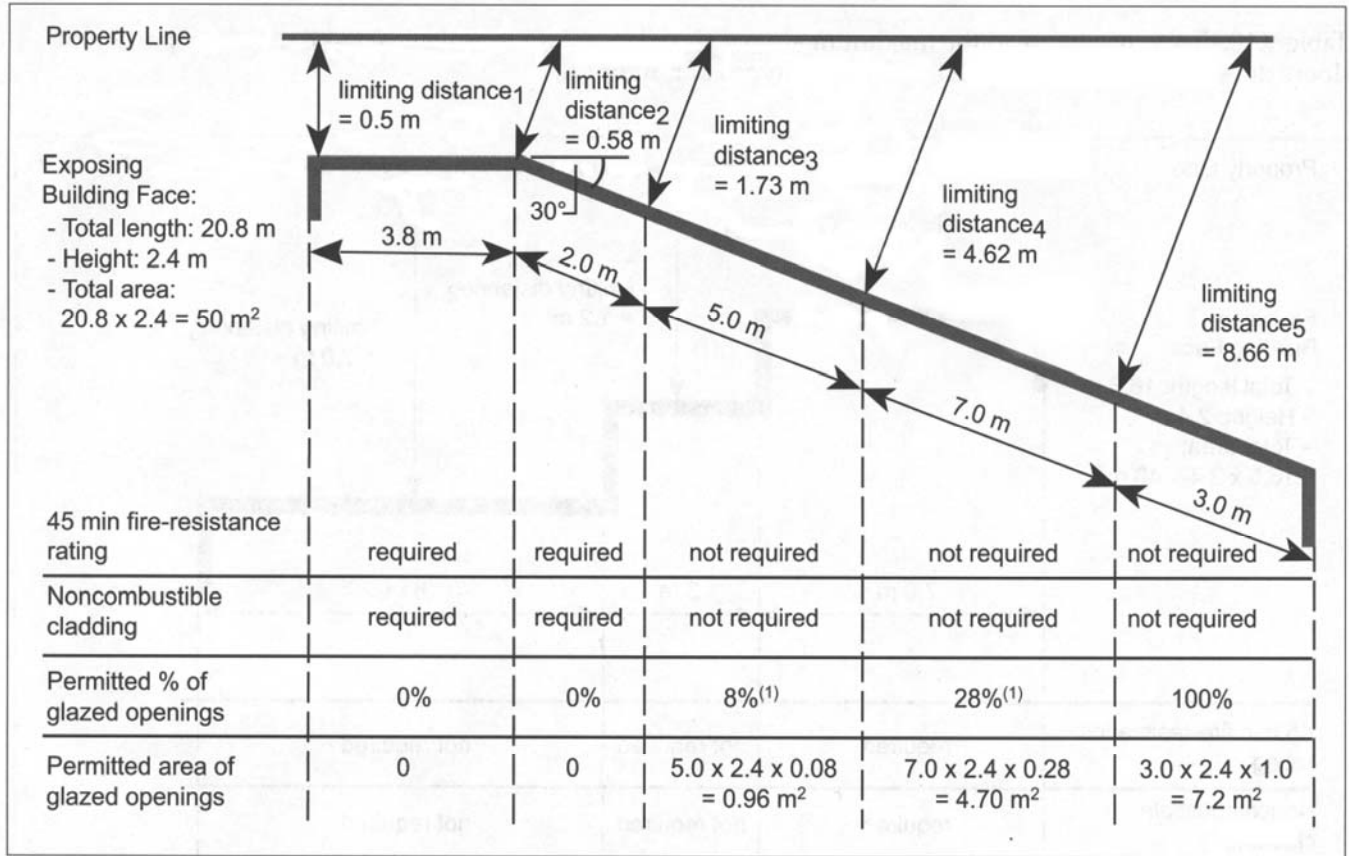


Figure A-9.10.15.4.(2)-B  
 Example of Determination of Criteria for the Exposing Building Face of a Skewed Wall of a House With Some Arbitrary Division of the Wall

Note to Figure A-9.10.15.4.(2)-B:

- (1) To simplify the calculations, choose the column for the lesser limiting distance nearest to the actual limiting distance. Interpolation for limiting distance is also acceptable and may result in a slightly larger permitted area of glazed openings. Interpolation can only be used for limiting distances greater than 1.2 m.

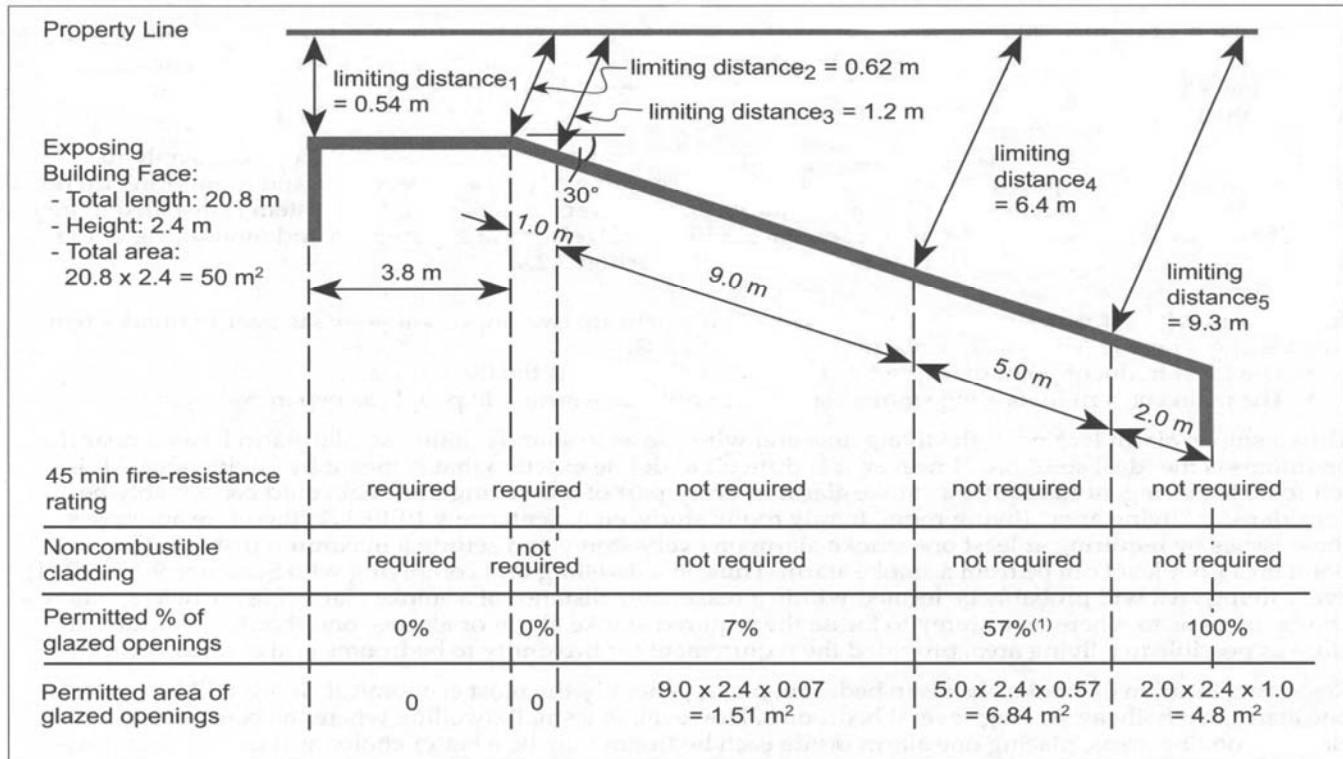


Figure A-9.10.15.4.(2)-C  
Example of Determination of Criteria for the Exposing Building Face of a Skewed Wall of a House With a Different Arbitrary Division of the Wall

Note to Figure A-9.10.15.4.(2)-C:

(1) To simplify the calculations, choose the column for the lesser limiting distance nearest to the actual limiting distance. Interpolation for limiting distance is also acceptable and may result in a slightly larger permitted area of glazed openings. Interpolation can only be used for limiting distances greater than 1.2 m.

**A-9.10.18.3.(1) Fire Alarm, Fire Detection and Smoke Detection Devices and Systems.**

A number of provisions captured by the cross-reference to Subsection 3.2.4. address issues already addressed in Subsection 9.10.18. and so are not applicable to Part 9 buildings. For example, Articles 9.10.18.2. and 9.10.18.8. identify the Part 9 buildings where fire alarm systems are required, so Article 3.2.4.1. does not apply.

Note that, because the cross-reference relating to sprinkler systems in Sentence 9.10.1.3.(8) refers to conformance with Sentence 3.2.5.7.(1), Articles 3.2.5.13. to 3.2.5.16. and Article 3.2.5.18., the requirements of Subsection 3.2.4. regarding electrical supervision and monitoring do not normally apply to sprinkler systems in Part 9 buildings. However, where a sprinkler system is installed in lieu of heat and smoke detectors according to Sentence 9.10.18.4.(3) electrical supervision and monitoring of the sprinkler system must comply with the provisions in Subsection 3.2.4.

**a<sub>3</sub> A-9.10.19.1. and A-9.10.19.3. Smoke Alarms with Visual Signalling Component.**

Smoke alarms with a visual signalling component can alert people who are deaf, deafened or hard of hearing to the presence of smoke in the dwelling just as the alarm sound provides an alert to people with no or low vision or who are sighted. The visual signal provides an extra level of safety alerts to building residents.



### A-9.10.19.3.(1) Location of Smoke Alarms.

Statistics have shown that next to kitchen fires, fires originating in bedrooms within dwelling units account for the second highest causes of fire deaths in homes.

The requirement for smoke alarms in sleeping rooms (bedrooms) provides early detection and warning of fires originating in sleeping rooms. Smoke alarms located outside sleeping rooms are required as they are better capable of detecting a fire originating outside of the room.

A smoke alarm is not required on each level in a split-level dwelling unit as each level does not count as a separate storey. Determine the number of storeys in a split-level dwelling unit and which levels are part of which storey as follows:

1. establish grade, (See definition of “grade” in Sentence 1.4.1.2.(1) of Division A.);
2. identify the first storey, (See definition of “first storey” in Sentence 1.4.1.2.(1) of Division A.);
3. identify the basement, (See definition of “basement” in Sentence 1.4.1.2.(1) of Division A.);
4. identify the second storey and, where applicable, the third storey.

#### Additional Smoke Alarms Outside of Sleeping Areas

As a minimum, one smoke alarm is required to be installed on each storey, preferably on the upper level of each one. As noted above, however, when the dwelling unit contains more than one sleeping area, a smoke alarm must be installed to serve each area. Where the sleeping areas are on two levels of a single storey in a split-level dwelling unit, an additional smoke alarm must be installed so that both areas are protected. See Figure A-9.10.19.3.(1).

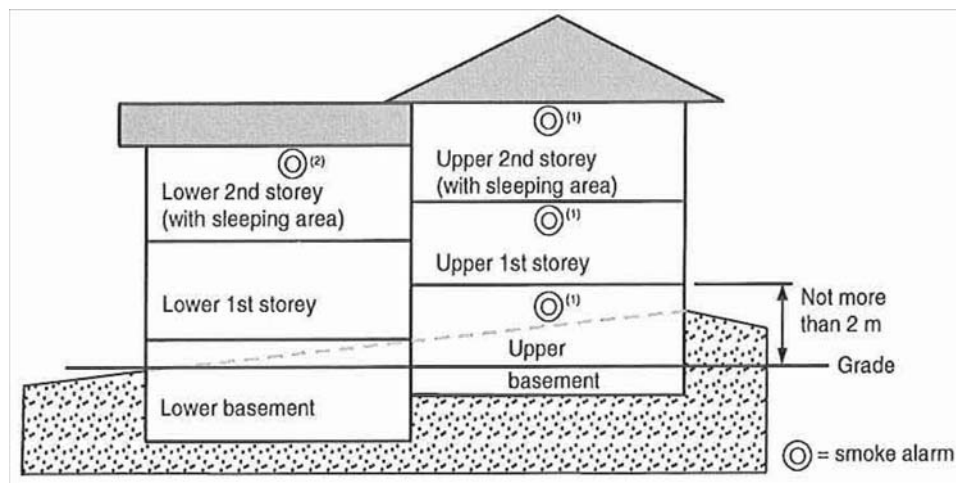


Figure A-9.10.19.3.(1)  
Two-Storey Split-Level Building

Notes to Figure A-9.10.19.3.(1):

- (1) One smoke alarm required for each of the basement, first storey and second storey.
- (2) An additional smoke alarm is required on the lower level of the second storey outside the sleeping rooms.

### A-9.10.20.3.(1) Fire Department Access Route Modification.

In addition to other considerations taken into account in the planning of fire department access routes, special variations could be permitted for a house or residential building that is protected with an automatic sprinkler system. The sprinkler system must be designed in accordance with the appropriate NFPA standard and there must be assurance that water supply pressure and quantity are unlikely to fail. These considerations could apply to buildings that are located on the sides of hills and are not conveniently accessible by roads designed for fire fighting equipment and also to infill housing units that are located behind other buildings on a given property.

### A-9.11.1.1.(1) Sound Transmission Class Ratings.

The specified STC rating of 50 is considered the minimum acceptable value, but many builders prefer to design for STC 55 or more in high quality accommodation.

Another reason to choose assemblies rated higher than STC 50 is that the STC ratings of assemblies are based on laboratory tests, but the sound transmission of any assembly as constructed in the field may be significantly less than its rating. This can be due to sound leaks, departures from design, poor workmanship or indirect (flanking) transmission paths overlooked in design. To provide a margin of safety to compensate for these, builders often select wall and floor systems that have been rated at least 5 points higher than the design STC rating in laboratory tests.

Sound leaks can occur where one wall meets another, the floor, or the ceiling. Leaks may also occur where the wall finish is cut for the installation of equipment or services. Avoid back-to-back electrical outlets or medicine cabinets. Carefully seal cracks or openings so structures are effectively airtight. Apply sealant below the plates in stud walls, between the bottom of drywall sheets and the structure behind, around all penetrations for services and, in general, wherever there is a crack, a hole or the possibility of one developing. Sound-absorbing material inside a well-designed wall decreases sound transmission. It has another advantage; it also helps to reduce the effects of leaks due, perhaps, to poor workmanship.

Indirect or flanking transmission arises where the parts of a building are rigidly connected together and where cavities in hollow walls or floors, or continuous lightweight layers connect apartments. Sound travels in cavities, as vibration along surfaces and through walls, ceilings and floors to adjacent rooms. Many paths other than the direct one through the party wall or floor may be involved. To achieve good sound insulation, transmission along flanking paths must be minimized by introducing breaks and resilient connections in the construction. Some examples of bad and good details are shown in Figure 9.11.1.1.(1).

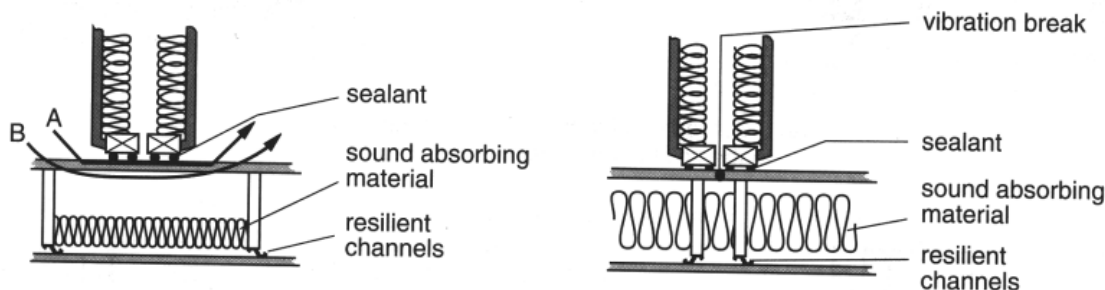


Figure A-9.11.1.1.(1)  
Cross Section Through Wall/floor Junctions Impact Noise

Changes to construction should not be made without consultation with someone competent in the field of acoustical design. Adding extra layers of drywall to walls in an attempt to reduce sound transmission, can actually increase it if done incorrectly. For example, attaching drywall on resilient channels directly to an existing wall or ceiling usually increases low frequency sound transmission. Adding an additional layer of drywall inside a double layer wall will also seriously increase sound transmission. Adding blocking inside walls to reduce the risk of fire spread should be done so it does not increase vibration transmission from one part of a wall or floor to the other.

To verify that acoustical privacy is being achieved, a field test can be done at an early stage in the construction; ASTM E336, "Measurement of Airborne Sound Attenuation Between Rooms in Buildings" will give a complete measurement. A simpler and less expensive method is ASTM E597, "Determining a Single Number Rating of Airborne Sound Insulation in Multi Unit Building Specifications". The rating provided by this test is usually within 2 points of the STC obtained from ASTM E336. It is useful for verifying performance and finding problems during construction. Alterations can then be made prior to project completion.

### **Impact Noise**

Section 9.11. has no requirements for control of impact noise transmission. Footstep and other impacts can cause severe annoyance in multi-family residences. Builders concerned about quality and reducing occupant complaints will ensure that floors are designed to minimize impact transmission. A recommended criterion is that bare floors (tested without a carpet) should achieve an impact insulation class (IIC) of 55. Some lightweight floors that satisfy this requirement may still cause complaints about low frequency impact noise transmission. Adding carpet to a floor will always increase the IIC rating but will not necessarily reduce low frequency noise transmission. Good footstep noise rejection requires fairly heavy floor slabs or floating floors.

Most frequently used methods of test for impact noise are ASTM E492, “Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using The Tapping Machine”, or ASTM E1007, “Field Measurement of Tapping Machine Impact Sound Transmission Through Floor-Ceiling Assemblies and Associated Support Structures”.

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**A-11.3.1.2.(1) New and Extension of Existing Building System.**

Generally, new or extended building systems should follow the Building Code for new construction, and where necessary, may seek some relief through compliance alternatives, alternative measures or match existing.

**A-11.3.3.1. Basic Renovation.**

The basic renovation is the simplest form of renovation; the work area is limited in size (within a suite or room), and does not involve a decrease in performance level of the building. The limit in size assures that accesses to exits, corridor separations, or other life safety systems are left intact, where less than a full floor area is under renovation.

**A-11.3.3.2. Extensive Renovation.**

In cases where extensive renovation of the building is proposed, there is generally no reason why the new systems should not comply with new construction requirements; in this case the applicant may seek relief only through “alternative measures”, should a construction difficulty arise that requires such relief. This would apply to the substantial renovation of the entire building.

**a<sub>2.1</sub> A-11.3.3.2.(3) Application of Limited Barrier-Free Design Requirements in Renovations.**

Certain barrier-free design provisions must be incorporated into all renovations where new interior walls or floor assemblies are installed other than in a suite described in Sentence (2) or in a suite in a building described in Sentence 3.8.1.1.(1). This includes construction within suites less than 300 m<sup>2</sup> and suites on storeys or floor levels not accessible by a barrier-free path of travel. In those cases, any new construction is subject to the barrier-free design provisions listed in 11.3.3.2.(3). Sentence 1.1.2.7.(1) of Division A continues to apply, so that any existing construction that is not being materially altered as part of the renovation need not include barrier-free design features.

The intent of these provisions is to make more suites and buildings accessible for people with sensory and other non-mobility disabilities. Not every person with a disability uses a wheelchair. Many people who use mobility aids such as canes or service animals or who have sensory disabilities are able to navigate stairs but would benefit from certain barrier-free elements such as lever door handles or an ambulatory washroom stall.

**A-11.4.3.1. Compensating Construction.**

Where the performance level of the building or part of the building is reduced through Subsection 11.4.2., compensating construction will be required to restore the performance level to its former state, of the early warning and evacuation systems, the fire and structural protection construction of the building. The amount of upgrading required depends on the results of a performance level evaluation.

The extent, or areas covered, of this upgrading include the protection of the surrounding existing areas from the portion being renovated, and the means of egress from the building if adversely affected by the renovation.

**A-11.4.3.2.(1) Structural.**

Provides, subject to any of three conditions, for adequacy of support for floors that will be receiving increased dead or live loads: options are restriction of loads, or upgrading of support systems.

**A-11.4.3.3. Increase in Occupant Load.**

Where the increase is greater than 15%, and construction takes place, the performance level is reduced and must be restored as required in Table 11.4.3.3.

Where the increase is 15% or less, and construction takes place, the performance level is reduced. Where the new occupant load is more than 15% above the exit capacity or for which a fire alarm system is required. The performance level must be restored as required by Table 11.4.3.3.

Smaller buildings, of 14 persons or less in boarding houses, and 16 persons or less in dwelling units, are exempt.

**A-11.4.3.4. Change in Major Occupancy.**

Provided construction takes place, a change in major occupancy to one of a greater hazard index reduces the performance level. An increase of the hazard index will trigger the classification of the entire building as to its construction index and hazard index under Table 11.4.3.3., Table 11.4.3.4.A. and B, to determine what upgrading, if any is required to ensure that the building will support that new hazard.

**A-11.5.1. Compliance Alternative.**

Subsection 11.5.1. allows compliance alternatives to be used, in lieu of certain requirements in other Parts of Division B. Alternatives to requirements in Part 3, 4, 6 or 8 may be used subject to the chief official's satisfaction, while alternatives to Parts 9 and 12 requirements are not subject to this condition.

**a<sub>3</sub> A-12.3.1.5.(2) Residential Furnaces.**

Where an existing furnace without a brushless direct current motor is replaced in a dwelling unit, replacement with a furnace with similar characteristics would provide an acceptable performance level, since the furnace flow rate and ductwork size would be compatible and this alteration to the heating and cooling system would not reduce the performance level.

## Explanatory Material for Division C

**A-1.2.1.1. Design by Architect or Professional Engineer.**

The practice of architecture is regulated by the Architects Act. The practice of professional engineering is regulated by the Professional Engineers Act. Professional design requirements related to the design of buildings are regulated by the Professional Engineers Act and the Architects Act.

Certain foundations, sprinkler protected glazed wall assemblies, shelf and rack storage systems, tent framing and sign structures are required to be designed by a suitably qualified and experienced person. Refer to Article 1.2.2.1. for general review by an Architect or a Professional Engineer of these assemblies and systems.

Refer to the "Use of the Professional Engineer's Seal" published by Professional Engineers Ontario for guidance on the proper use of a Professional Engineer's seal.

**A-1.2.2.1. General Review by Architect or Professional Engineer.**

In addition to the general review of the construction of buildings described in Table 1.2.2.1. by an Architect or Professional Engineer, Sentences 1.2.2.1.(4) to (9) require general review by an Architect or a Professional Engineer of certain foundations, sprinkler protected glazed wall assemblies, shelf and rack storage systems, tent framing and sign structures. These assemblies and systems are required to be designed by a suitably qualified and experienced person, as detailed in Article 1.2.2.1.

**A-1.3.6.1. As Constructed Plans.**

The intent of the provision for as constructed plans is to provide the municipality with authority to ask for information that is necessary for the enforcement of the Act and the Building Code. The intent of the provision is not to duplicate the permit approval process and require similar information to be filed upon completion of the project. Similarly, the provision is not intended to require information and documentation beyond those that are normally generated in the building permit approval process.

**A-3.2.2.2.(1) Other Designers.**

The qualifications for the designer of a public pool located in a building are based on the size and occupancy of the building. An outdoor public pool is a designated structure. The occupancy of an outdoor public pools depends on the major occupancy of the building it serves. In the case where the outdoor public pool is a stand-alone structure with ancillary change facilities, the major occupancy of the pool would be Group A, Division 4 where it is used for social, education, recreational or similar purposes.

# **MMAH Supplementary Standard SA-1**

## **Objectives and Functional Statements Attributed to the Acceptable Solutions**

**September 2, 2014 update**

**COMMENCEMENT**

MMAH Supplementary Standard SA-1 comes into force on the 1st day of January, 2014.

- m<sub>1</sub>** Ruling of the Minister of Municipal Affairs and Housing (Minister's Ruling) MR-13-S-24 takes effect on the 1st day of January, 2014.
- r<sub>3</sub>** SA-1 as amended by Ontario Regulation 361/13 comes into force on the 1st day of January, 2014.
- r<sub>3,1</sub>** SA-1 as amended by Ontario Regulation 361/13 corresponding to Ontario Regulation 361/13 provisions that come into force on the 1st day of January, 2015.
- r<sub>4</sub>** SA-1 as amended by Ontario Regulation 361/13 corresponding to Ontario Regulation 368/13 provisions that come into force on the 1st day of January, 2015.
- r<sub>5</sub>** SA-1 as amended by Ontario Regulation 191/14 comes into force on the 1st day of January, 2015.

**EDITORIAL**

- e<sub>1</sub>** Editorial correction issued for January 1st, 2014.
- e<sub>2</sub>** Editorial correction issued for January 1st, 2014.
- e<sub>2,1</sub>** Editorial correction issued for January 1st, 2015.
- e<sub>3</sub>** Editorial correction issued for January 1st, 2015.

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# **SA-1 Objectives and Functional Statements Attributed to the Acceptable Solutions**

## **1. Scope**

This standard specifies, for the purposes of Article 1.2.1.1. of Division A of the Building Code, the objectives and functional statements that have been attributed to acceptable solutions provided in Division B of the Building Code.

## **2. Objectives and Functional Statements**

The objectives listed in this standard are those set out in Part 2 of Division A of the Building Code.

The functional statements listed in this standard are set out in Part 3 of Division A of the Building Code.

## **3. Attribution to Acceptable Solutions**

For the purposes of compliance with the Building Code, as required in Sentence 1.2.1.1.(2) of Division A of the Building Code, the objectives and functional statements attributed to the acceptable solutions in Division B shall be the objectives and functional statements listed in Tables 3 to 12.

Table 3  
Objectives and Functional Statements Attributed to the Acceptable Solutions in Part 3 of Division B

Acceptable Solutions	Objectives and Functional Statements
3.1.1.1.	Scope
(1)	
3.1.1.2.	Radon
(1)	[F40, F50-OH1.1]
3.1.1.3.	Building in Flood Plains
(1)	(a) [F20-OP2.1] (a) [F20-OS2.1, OS2.3] (a) [F61-OH1.3] (b) [F10, F12-OS3.1] [F10, F30-OS3.7]
3.1.2.1.	Classification of Buildings
(1)	
(2)	
3.1.2.2.	Occupancies of the Same Classification
(1)	
3.1.2.3.	Arena Type Buildings
(1)	
3.1.2.4.	Police Stations
(1)	
3.1.2.5.	Group B, Division 3 Occupancies
(1)	
3.1.2.6.	Restaurants
(1)	
3.1.2.7.	Storage of Combustible Fibres
(1)	
3.1.3.1.	Separation of Major Occupancies
(1)	[F03-OP1.2] [F03-OS1.2]
r <sub>5</sub> (2)	
r <sub>5</sub> (3)	[F03-OP1.2] [F03-OS1.2]
r <sub>5</sub> (4)	[F03-OP1.2] [F03-OS1.2]
r <sub>5</sub> (5)	
3.1.3.2.	Prohibition of Occupancy Combinations
(1)	[F02, F03-OS1.2] [F10-OS1.5]
(2)	[F02, F03-OS1.2] [F10-OS1.5]
(3)	[F41-OH2.1]
(4)	
r <sub>5</sub> (5)	[F02, F03-OS1.2] [F10-OS1.5]
r <sub>5</sub> (6)	
3.1.4.1.	Combustible Materials Permitted
(1)	
3.1.4.2.	Protection of Foamed Plastics
(1)	[F01-OP1.1] [F02-OP1.2] [F01-OS1.1] [F02-OS1.2]
3.1.4.3.	Wires and Cables
(1)	[F02-OP1.2] [F02-OS1.2]
(2)	

Acceptable Solutions	Objectives and Functional Statements
(3)	
3.1.4.4.	Nonmetallic Raceways
(1)	
3.1.4.5.	Fire-Retardant Treated Wood
(1)	[F02-OP1.2] [F02-OS1.2]
3.1.4.6.	Heavy Timber Construction Alternative
e <sub>3</sub> (1), (2)	
3.1.4.7.	Heavy Timber Construction
e <sub>3</sub> (1) to (12)	
r <sub>5</sub> 3.1.4.8.	Cladding
(1)	[F02, F03-OP3.1]
r <sub>5</sub> 3.1.4.9.	Combustible Piping
(1)	[F02-OP1.2] [F02-OS1.2]
(2)	
3.1.5.1.	Noncombustible Materials
(1)	[F02-OP1.2] [F02-OS1.2]
(2)	
(3)	
(4)	
3.1.5.2.	Minor Combustible Components
(1)	
3.1.5.3.	Combustible Roofing Materials
(1)	
(2)	
(3)	
(4)	
3.1.5.4.	Combustible Glazing and Skylights
(1)	
(2)	
(3)	
(4)	
(5)	
3.1.5.5.	Combustible Components for Exterior Walls
(1)	
(2)	[F02, F03-OP3.1]
(3)	
(4)	
(5)	
(6)	
3.1.5.6.	Nailing Elements
(1)	
3.1.5.7.	Combustible Millwork
(1)	
3.1.5.8.	Combustible Flooring Elements
(1)	
(2)	
(3)	
(4)	

Acceptable Solutions	Objectives and Functional Statements
3.1.5.9.	Combustible Stairs in Dwelling Units
(1)	
3.1.5.10.	Combustible Interior Finish
(1)	
(2)	
(3)	
3.1.5.11.	Gypsum Board
(1)	
3.1.5.12.	Combustible Insulation and its Protection
(1)	
(2)	
(3)	
(4)	
(5)	
(6)	
(7)	
3.1.5.13.	Combustible Elements in Partitions
(1)	
(2)	
(3)	
3.1.5.14.	Storage Lockers in Residential Buildings
(1)	
3.1.5.15.	Combustible Ducts
(1)	
(2)	
(3)	
3.1.5.16.	Combustible Piping Materials
(1)	
(2)	
(3)	
3.1.5.17.	Combustible Plumbing Fixtures
(1)	
3.1.5.18.	Wires and Cables
(1)	
(2)	
3.1.5.19.	Combustible Travelling Cables for Elevators
(1)	
3.1.5.20.	Nonmetallic Raceways
(1)	[F02-OP1.2]
	[F02-OS1.2]
3.1.5.21.	Wires in Computer Room Floors
(1)	
(2)	
3.1.5.22.	Combustible Components in Public Pools and Public Spas
(1)	
3.1.5.23.	Marquees Having Combustible Elements
(1)	
(2)	
3.1.5.24.	Combustible Mezzanines
(1)	

Acceptable Solutions	Objectives and Functional Statements
(2)	[F03-OP1.2] [F03-OP3.1] [F03-OS1.2]
(3)	[F80, F04-OP1.2] [F80, F04-OP1.3] [F80, F04-OS1.2]
(4)	[F80, F04-OP1.2] [F80, F04-OP3.1] [F80, F04-OS1.2]
<b>3.1.10.3.</b>	<b>Continuity of Firewalls</b>
(1)	[F03-OP1.2] Applies to portion of Code text: "A <i>firewall</i> shall extend from the ground continuously through, or adjacent to, all <i>storeys</i> of a <i>building</i> or <i>buildings</i> so separated ..." [F03-OP3.1] Applies to portion of Code text: "A <i>firewall</i> shall extend from the ground continuously through, or adjacent to, all <i>storeys</i> of a <i>building</i> or <i>buildings</i> so separated ..." [F03-OS1.2] Applies to portion of Code text: "A <i>firewall</i> shall extend from the ground continuously through, or adjacent to, all <i>storeys</i> of a <i>building</i> or <i>buildings</i> so separated ..."
(2)	
<b>3.1.10.4.</b>	<b>Parapets</b>
(1)	[F03-OP1.2] [F03-OP3.1] [F03-OS1.2]
(2)	
<b>3.1.10.5.</b>	<b>Maximum Openings</b>
(1)	[F03-OP1.2] Applies to portion of Code text: "... the aggregate width of openings shall be not more than 25% of the entire length of the <i>firewall</i> ." [F03-OP3.1] Applies to portion of Code text: "... the aggregate width of openings shall be not more than 25% of the entire length of the <i>firewall</i> ." [F03-OS1.2] Applies to portion of Code text: "... the aggregate width of openings shall be not more than 25% of the entire length of the <i>firewall</i> ."
<b>3.1.10.6.</b>	<b>Exposure Protection for Adjacent Walls</b>
(1)	
<b>3.1.10.7.</b>	<b>Combustible Projections</b>
(1)	[F03-OP1.2] Applies to portion of Code text: " <i>Combustible material</i> shall not extend across the end of a <i>firewall</i> ..." [F03-OP3.1] Applies to portion of Code text: " <i>Combustible material</i> shall not extend across the end of a <i>firewall</i> ..." [F03-OS1.2] Applies to portion of Code text: " <i>Combustible material</i> shall not extend across the end of a <i>firewall</i> ..."
(2)	[F03-OP1.2] [F03-OP3.1] [F03-OS1.2]
<b>3.1.11.1.</b>	<b>Separation of Concealed Spaces</b>
(1)	[F03-OP1.2] [F03-OS1.2]
<b>3.1.11.2.</b>	<b>Fire Blocks in Wall Assemblies</b>
(1)	[F03-OP1.2] [F03-OS1.2]
(2)	
<b>3.1.11.3.</b>	<b>Fire Blocks between Nailing and Supporting Elements</b>
(1)	[F03-OP1.2] [F03-OS1.2]
(2)	[F03-OP1.2] [F03-OS1.2]
<b>3.1.11.4.</b>	<b>Fire Blocks between Vertical and Horizontal Spaces</b>
(1)	[F03-OP1.2] [F03-OS1.2]

Acceptable Solutions	Objectives and Functional Statements
3.1.11.5.	Fire Blocks of Horizontal Concealed Spaces
(1)	[F03, F04-OP1.2] [F03, F04-OS1.2]
(2)	[F03, F04-OP1.2] [F03, F04-OS1.2]
(3)	[F03, F04-OP1.2] [F03, F04-OS1.2]
(4)	
3.1.11.6.	Fire Blocks of Crawl Spaces
(1)	[F03, F04-OP1.2] [F03, F04-OS1.2]
3.1.11.7.	Fire Block Materials
(1)	[F04-OP1.2] [F04-OS1.2]
(2)	
(3)	
(4)	
(5)	[F04-OP1.2] [F04-OS1.2]
(6)	[F03-OP1.2] [F03-OS1.2]
(7)	
3.1.12.1.	Determination of Ratings
(1)	[F02-OP1.2] [F02-OS1.2]
(2)	[F02-OP1.2] [F02-OS1.2]
(3)	
3.1.13.1.	Interior Finish Description
(1)	
3.1.13.2.	Flame-Spread Rating
(1)	[F02-OP1.2] [F02-OS1.2]
(2)	
(3)	
(4)	
(5)	
3.1.13.3.	Plumbing Fixtures and Bathroom Finishes
(1)	
(2)	[F02-OP1.2] [F02-OS1.2]
3.1.13.4.	Light Diffusers and Lenses
(1)	
3.1.13.5.	Skylights
(1)	[F02-OS1.5]
3.1.13.6.	Corridors
(1)	[F02-OS1.2, OS1.5]
(2)	
(3)	
(4)	
(5)	[F02-OS1.2, OS1.5]
(6)	

Acceptable Solutions	Objectives and Functional Statements
<b>3.1.13.7.</b>	<b>High Buildings</b>
(1)	[F02-OP1.2] [F02-OS1.2]
(2)	
(3)	
(4)	[F02-OP1.2] [F02-OS1.2]
(5)	
(6)	
(7)	
<b>3.1.13.8.</b>	<b>Noncombustible Construction</b>
(1)	
<b>3.1.13.9.</b>	<b>Underground Walkways</b>
(1)	[F02-OP3.1] [F02-OS1.2]
<b>3.1.13.10.</b>	<b>Exterior Exit Passageway</b>
(1)	[F02-OS1.5]
<b>3.1.13.11.</b>	<b>Elevator Cars</b>
(1)	[F02-OP1.2] [F02-OS1.2]
(2)	[F02-OP1.2] [F02-OS1.2]
<b>3.1.14.1.</b>	<b>Fire-Retardant Treated Wood Roof Systems</b>
(1)	[F02-OP1.2] [F02-OS1.2]
(2)	[F02-OP1.3] [F02-OS1.2, OS1.3]
<b>3.1.14.2.</b>	<b>Metal Roof Deck Assemblies</b>
(1)	[F02-OP1.2] [F02-OS1.2]
(2)	
<b>3.1.15.1.</b>	<b>Roof Covering Classification</b>
(1)	[F02-OP1.2] [F02-OP3.1] [F02-OS1.2]
<b>3.1.15.2.</b>	<b>Roof Coverings</b>
(1)	[F02-OP1.2] [F02-OP3.1] [F02-OS1.2]
(2)	
(3)	[F02-OP1.2] [F02-OP3.1] [F02-OS1.2]
<b>3.1.16.1.</b>	<b>Fabric Awnings, Canopies and Marquees</b>
(1)	[F02-OP1.2] [F02-OS1.2, OS1.5]
<b>3.1.17.1.</b>	<b>Occupant Load Determination</b>
(1)	[F10-OS3.7] [F72-OH2.1] [F71-OH2.3]
(2)	[F10-OS3.7] [F72-OH2.1] [F71-OH2.3]
(3)	

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Acceptable Solutions	Objectives and Functional Statements
(4)	[F10-OS3.7] [F72-OH2.1] [F71-OH2.3]
(5)	[F10-OS3.7] [F72-OH2.1] [F71-OH2.3]
(6)	
(7)	
<b>3.1.17.2.</b>	<b>Dance Floor</b>
(1)	
<b>3.1.17.3.</b>	<b>Public Pools</b>
(1)	[F10-OS3.7] [F72-OH2.1] [F71-OH2.3]
(2)	[F10-OS3.7] [F72-OH2.1] [F71-OH2.3]
<b>3.1.18.1.</b>	<b>Drainage</b>
(1)	[F60-OH1.1, OH1.2, OH1.3] [F60-OS2.3]
<b>3.1.19.1.</b>	<b>Clearance to Buildings</b>
(1)	[F01-OP1.1] [F01-OS1.1] [F32-OS3.3]
(2)	[F01-OP1.1] [F01-OS1.1] [F32-OS3.3]
(3)	[F01-OP1.1] [F01-OS1.1] [F32-OS3.3]
(4)	
<b>3.1.20.1.</b>	<b>Glass</b>
(1)	[F30-OS2.3, OS3.1]
<b>3.2.1.1.</b>	<b>Exceptions in Determining Building Height</b>
(1) to (9)	
<b>3.2.1.2.</b>	<b>Storage Garage Considered as a Separate Building</b>
(1)	[F03-OP1.2] [F03-OS1.2]
(2)	[F03-OP1.2] [F03-OS1.2]
(3)	[F03-OP1.2] [F03-OS1.2]
<b>3.2.1.3.</b>	<b>Roof Considered as a Wall</b>
(1)	
<b>3.2.1.4.</b>	<b>Floor Assembly over Basement</b>
(1)	[F03-OP1.2] [F04-OP1.3] [F03-OS1.2] [F04-OS1.3]
(2)	[F04-OP1.2, OP1.3] [F04-OS1.2, OS1.3]
<b>3.2.1.5.</b>	<b>Fire Containment in Basements</b>
(1)	[F02-OP1.2, OP1.3] [F02-OS1.2, OS1.3]
(2)	
<b>3.2.1.6.</b>	<b>Mezzanines</b>
(1)	



Acceptable Solutions	Objectives and Functional Statements
3.2.2.1.	Application
(1)	
3.2.2.2.	Special and Unusual Structures
(1)	[F02, F03, F04-OP1.2, OP1.3]
	[F02, F03, F04-OS1.2, OS1.3]
3.2.2.3.	Exceptions to Structural Fire Protection
(1)	
3.2.2.4.	Buildings with Multiple Major Occupancies
(1)	
(2)	
3.2.2.5.	Applicable Building Height and Area
(1)	
3.2.2.6.	Multiple Major Occupancies
(1)	[F02, F03, F04-OP1.2, OP1.3]
	[F02, F03, F04-OS1.2, OS1.3]
3.2.2.7.	Superimposed Major Occupancies
(1)	
(2)	
3.2.2.8.	Exceptions for Major Occupancies
(1)	
(2)	
3.2.2.9.	Crawl Spaces
(1)	
(2)	
3.2.2.10.	Streets
(1)	[F12-OP1.2]
	[F12-OS1.2, OS1.5]
(2)	
(3)	
(4)	
(5)	
(6)	
3.2.2.11.	Exterior Balconies
(1)	
3.2.2.12.	Exterior Passageways
(1)	
3.2.2.13.	Occupancy on Roof
(1)	
3.2.2.14.	Roof-Top Enclosures
(1)	
(2)	
(3)	
(4)	
3.2.2.15.	Storeys Below Ground
(1)	
(2)	(a) [F02, F04-OP1.2, OP1.3]
	(a) [F02, F04-OS1.2, OS1.3]
	(b), (c) [F03, F04-OP1.2] [F04-OP1.3]
	(b), (c) [F03, F04-OS1.2] [F04-OS1.3]
(3)	

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Acceptable Solutions	Objectives and Functional Statements
3.2.2.16.	Heavy Timber Roof Permitted
e <sub>3</sub> (1), (2)	
3.2.2.17.	Sprinklers in Lieu of Roof Rating
r <sub>5</sub> (1)	
(2)	
3.2.2.18.	Automatic Sprinkler System Required
(1)	
3.2.2.19.	Buildings Containing Impeded Egress Zones
(1)	
3.2.2.20.	Group A, Division 1, Any Height, Any Area, Sprinklered
(1)	
(2)	[F02-OP1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>non-combustible construction</i> ..."
	[F02, F04-OP1.2, OP1.3] Applies to portion of Code text: "a) ... the <i>building</i> shall be <i>sprinklered</i> ,"
	[F02-OS1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>non-combustible construction</i> ..."
	[F02, F04-OS1.2, OS1.3] Applies to portion of Code text: "a) ... the <i>building</i> shall be <i>sprinklered</i> ,"
	(b), (d) [F03, F04-OP1.2] [F04-OP1.3]
	(b), (d) [F03, F04-OS1.2] [F04-OS1.3]
	(c) [F04-OP1.3]
	(c) [F04-OS1.3]
3.2.2.21.	Group A, Division 1, One Storey, Limited Area
(1)	
(2)	[F02-OP1.2] Applies to portion of Code text: "The <i>building</i> referred to in Sentence (1) is permitted to be of <i>heavy timber construction</i> or <i>noncombustible construction</i> used singly or in combination,"
	[F03, F04-OP1.2] [F04-OP1.3] Applies to portion of Code text: "a) floor assemblies shall be <i>fire separations</i> , i) with a <i>fire-resistance rating</i> not less than 45 min," and to Clause (b).
	[F02-OS1.2] Applies to portion of Code text: "The <i>building</i> referred to in Sentence (1) is permitted to be of <i>heavy timber construction</i> or <i>noncombustible construction</i> used singly or in combination"
	[F03, F04-OS1.2] [F04-OS1.3] Applies to portion of Code text: "a) floor assemblies shall be <i>fire separations</i> , i) with a <i>fire-resistance rating</i> not less than 45 min," and to Clause (b).
3.2.2.22.	Group A, Division 1, One Storey
(1)	
(2)	[F03, F04-OP1.2] [F04-OP1.3] Applies to portion of Code text: "a) floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 45 min," and to Clause (d).
	[F03, F04-OS1.2] [F04-OS1.3] Applies to portion of Code text: "a) floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 45 min," and to Clause (d).
	(b), (c) [F04-OP1.3]
	(b), (c) [F04-OS1.3]
3.2.2.23.	Group A, Division 2, Any Height, Any Area, Sprinklered
(1)	
(2)	[F02-OP1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ..."
	[F02, F04-OP1.2, OP1.3] Applies to portion of Code text: "a) ... the <i>building</i> shall be <i>sprinklered</i> ,"
	[F02-OS1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ..."
	[F02, F04-OS1.2, OS1.3] Applies to portion of Code text: "a) ... the <i>building</i> shall be <i>sprinklered</i> ,"
	(b), (d) [F03, F04-OP1.2] [F04-OP1.3]
	(b), (d) [F03, F04-OS1.2] [F04-OS1.3]
	(c) [F04-OP1.3]
	(c) [F04-OS1.3]
3.2.2.24.	Group A, Division 2, up to 6 Storeys, Any Area, Sprinklered
(1)	[F02, F04-OP1.2, OP1.3] Applies to portion of Code text: "a)... the <i>building</i> is <i>sprinklered</i> ,"
	[F02, F04-OS1.2, OS1.3] Applies to portion of Code text: "a)... the <i>building</i> is <i>sprinklered</i> ,"

Acceptable Solutions	Objectives and Functional Statements
(2) (Cont'd)	[F02-OS1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ..." [F02, F04-OS1.2, OS1.3] Applies to portion of Code text: "a) ... the <i>building</i> shall be <i>sprinklered</i> ," (b), (d) [F03, F04-OP1.2] [F04-OP1.3] (b), (d) [F03, F04-OS1.2] [F04-OS1.3] (c) [F04-OP1.3] (c) [F04-OS1.3]
3.2.2.37.	<b>Group B, Division 1, up to 3 Storeys, Sprinklered</b>
(1)	[F02, F04-OP1.2, OP1.3] Applies to portion of Code text: "a) ... the <i>building</i> is <i>sprinklered</i> " [F02, F04-OS1.2, OS1.3] Applies to portion of Code text: "a) ... the <i>building</i> is <i>sprinklered</i> "
(2)	[F02-OP1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ..." [F02-OS1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ..." (a), (c) [F03, F04-OP1.2] [F04-OP1.3] (a), (c) [F03, F04-OS1.2] [F04-OS1.3] (b) [F04-OP1.3] (b) [F04-OS1.3]
3.2.2.38.	<b>Group B, Division 2 or Division 3, Any Height, Any Area, Sprinklered</b>
(1)	
(2)	[F02-OP1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ." [F02, F04-OP1.2, OP1.3] Applies to portion of Code text: "a) ... the <i>building</i> shall be <i>sprinklered</i> ," [F02-OS1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ." [F02, F04-OS1.2, OS1.3] Applies to portion of Code text: "a) ... the <i>building</i> shall be <i>sprinklered</i> ," (b), (d) [F03, F04-OP1.2] [F04-OP1.3] (b), (d) [F03, F04-OS1.2] [F04-OS1.3] (c) [F04-OP1.3] (c) [F04-OS1.3]
3.2.2.39.	<b>Group B, Division 2 or Division 3, up to 3 Storeys, Sprinklered</b>
(1)	[F02, F04-OP1.2, OP1.3] Applies to portion of Code text: "a) ... the <i>building</i> is <i>sprinklered</i> ," [F02, F04-OS1.2, OS1.3] Applies to portion of Code text: "a) ... the <i>building</i> is <i>sprinklered</i> ,"
(2)	[F02-OP1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ." [F02-OS1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ." (a), (c) [F03, F04-OP1.2] [F04-OP1.3] (a), (c) [F03, F04-OS1.2] [F04-OS1.3] (b) [F04-OP1.3] (b) [F04-OS1.3]
3.2.2.40.	<b>Group B, Division 2 or Division 3, up to 2 Storeys, Sprinklered</b>
(1)	[F02, F04-OS1.2, OS1.3] Applies to portion of Code text: "a) ... the <i>building</i> is <i>sprinklered</i> ," [F02, F04-OP1.2, OP1.3] Applies to portion of Code text: "a) ... the <i>building</i> is <i>sprinklered</i> ,"
(2)	(a), (c) [F03, F04-OP1.2] [F04-OP1.3] (a), (c) [F03, F04-OS1.2] [F04-OS1.3] (b) [F04-OP1.3] (b) [F04-OS1.3]
3.2.2.41.	<b>Group B, Division 2 or Division 3, One Storey, Sprinklered</b>
(1)	[F02, F04-OP1.2, OP1.3] Applies to portion of Code text: "a) ... the <i>building</i> is <i>sprinklered</i> ," [F02, F04-OS1.2, OS1.3] Applies to portion of Code text: "a) ... the <i>building</i> is <i>sprinklered</i> ,"
3.2.2.42.	<b>Group C, Any Height, Any Area, Sprinklered</b>
(1)	

Acceptable Solutions	Objectives and Functional Statements
(2)	[F02-OP1.2] Applies to portion of Code text: "...the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ," [F02-OS1.2] Applies to portion of Code text: "...the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ," [F02,F04-OP1.2, OP1.3] Applies to portion of Code text: "...a) ...the <i>building</i> shall be <i>sprinklered</i> ..." [F02,F04-OS1.2, OP1.3] Applies to portion of Code text: "...a) ...the <i>building</i> shall be <i>sprinklered</i> ..." (b), (d) [F03-OP1.2] [F04-OP1.2, OP1.3] (b), (d) [F03-OS1.2] [F04-OS1.2, OS1.3] (c), (d) [F04-OP1.3] (c), (d) [F04-OS1.3]
(3)	
r <sub>5</sub> 3.2.2.43.	<b>Group C, up to 6 Storeys, Sprinklered, Noncombustible Construction</b>
(1)	[F02,F04-OP1.2, OP1.3] Applies to portion of Code text: "...a) ...the <i>building</i> shall be <i>sprinklered</i> ..." [F02,F04-OS1.2,OP1.3] Applies to portion of Code text: "...a) ...the <i>building</i> shall be <i>sprinklered</i> ..."
(2)	[F02-OP1.2] Applies to portion of Code text: "...the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ," [F02-OS1.2] Applies to portion of Code text: "...the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ," (a), (c) [F03-OP1.2] [F04-OP1.2, OP1.3] (a), (c) [F03-OS1.2] [F04-OS1.2, OS1.3] (b), (c) [F04-OP1.3] (b), (c) [F04-OS1.3]
(3)	
r <sub>5</sub> 3.2.2.43A.	<b>Group C, up to 6 Storeys, Sprinklered, Combustible Construction</b>
(1)	[F02,F04-OP1.2, OP1.3] Applies to portion of Code text: "...a) ...the <i>building</i> shall be <i>sprinklered</i> ..." [F02,F04-OS1.2,OP1.3] Applies to portion of Code text: "...a) ...the <i>building</i> shall be <i>sprinklered</i> ..."
(2)	[F03, F04-OP1.2] [F04-OP1.3] Applies to portion of Code text: "a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 1 h," and to Clause (f). [F03, F04-OS1.2] [F04-OS1.3] Applies to portion of Code text: "a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 1 h," and to Clause (f). (b), (c), (d), (f) [F04-OP1.3] (b), (c), (d), (f) [F04-OS1.3] (a), (f) [F03-OP1.2] [F04-OP1.2, OP1.3] (a), (f) [F03-OS1.2] [F04-OS1.2, OS1.3] (e) [F03, F06-OS1.2] [F05, F06-OS1.5] (e) [F03, F06-OP1.2]
(3)	
(4)	
(5)	[F02, F03-OS1.2] [F10-OS1.5]
3.2.2.44.	<b>Group C, up to 4 Storeys, Noncombustible Construction</b>
(1)	
(2)	[F02-OP1.2] Applies to portion of Code text: "...the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ," [F02-OS1.2] Applies to portion of Code text: "...the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ," [F03, F04-OP1.2] [F04-OP1.3] Applies to portion of Code text: "a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 1 h," and to Clause (d). [F03, F04-OS1.2] [F04-OS1.3] Applies to portion of Code text: "a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 1 h," and to Clause (d). (b), (d) [F04-OP1.3] (b), (d) [F04-OS1.3] (c), (d) [F04-OP1.3] (c), (d) [F04-OS1.3]

	Acceptable Solutions	Objectives and Functional Statements	
e <sub>1</sub>	(3), (4)		
m <sub>1</sub>	(5)	[F02, F04 – OP1.2, OP1.3] [F02, F04 – OS1.2, OS1.3]	
	3.2.2.45.	<b>Group C, up to 4 Storeys, Sprinklered</b>	
e <sub>1</sub>	(1)	[F02, F04-OP1.2, OP1.3] Applies to portion of Code text: " a)... the <i>building</i> is <i>sprinklered</i> ," [F02, F04-OS1.2, OS1.3] Applies to portion of Code text: " a)... the <i>building</i> is <i>sprinklered</i> ,"	
	(2)	[F03, F04-OP1.2] [F04-OP1.3] Applies to portion of Code text: "a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 1 h," and to Clause (c). [F03, F04-OS1.2] [F04-OS1.3] Applies to portion of Code text: "a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 1 h," and to Clause (c). (b), (c) [F04-OP1.3] (b), (c) [F04-OS1.3]	
		(3), (4)	
		3.2.2.46.	<b>Group C, up to 3 Storeys, Increased Area</b>
	e <sub>1</sub>	(1)	
(2)		[F03, F04-OP1.2] [F04-OP1.3] Applies to portion of Code text: " a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 1 h," and to Clause (d). [F03, F04-OS1.2] [F04-OS1.3] Applies to portion of Code text: " a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 1 h," and to Clause (d). (b), (c), (d) [F04-OP1.3] (b), (c), (d) [F04-OS1.3]	
		(3), (4)	
		3.2.2.47.	<b>Group C, up to 3 Storeys</b>
m <sub>1</sub>		(5)	[F02, F04 – OP1.2, OP1.3] [F02, F04 – OS1.2, OS1.3]
	(1)		
	(2)	[F03, F04-OP1.2] [F04-OP1.3] Applies to portion of Code text: "a)... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 45 min," and to Clause (c). [F03, F04-OS1.2] [F04-OS1.3] Applies to portion of Code text: "a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 45 min," and to Clause (c). (b), (c) [F04-OP1.3] (b), (c) [F04-OS1.3]	
		(3), (4)	
		3.2.2.48.	<b>Group C, up to 3 Storeys, Sprinklered</b>
e <sub>1</sub>	(1)	[F02, F04-OP1.2, OP1.3] Applies to portion of Code text: " a)... the <i>building</i> is <i>sprinklered</i> ," [F02, F04-OS1.2, OS1.3] Applies to portion of Code text: " a)... the <i>building</i> is <i>sprinklered</i> ,"	
	(2)	[F03, F04-OP1.2] [F04-OP1.3] Applies to portion of Code text: "a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 45 min," and to Clause (c). [F03, F04-OS1.2] [F04-OS1.3] Applies to portion of Code text: "a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 45 min," and to Clause (c). (b), (c) [F04-OP1.3] (b), (c) [F04-OS1.3]	
		(3), (4)	
		3.2.2.49.	<b>Group D, Any Height, Any Area</b>
	e <sub>1</sub>	(1)	
(2)		[F02-OP1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ," [F02, F04-OP1.2, OP1.3] Applies to portion of Code text: " a)... the <i>building</i> shall be <i>sprinklered</i> ..." [F02-OS1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ," [F02, F04-OS1.2, OS1.3] Applies to portion of Code text: " a)... the <i>building</i> shall be <i>sprinklered</i> ..."	

Acceptable Solutions	Objectives and Functional Statements
(2) (Cont'd)	(b), (d) [F03, F04-OP1.2] [F04-OP1.3] (b), (d) [F03, F04-OS1.2] [F04-OS1.3] (c) [F04-OP1.3] (c) [F04-OS1.3]
3.2.2.50.	Group D, up to 6 Storeys
(1)	
(2)	[F02-OP1.2] Applies to portion of Code text: "The <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ," [F04-OP1.3] Applies to portion of Code text: "c) roof assemblies shall have a <i>fire-resistance rating</i> not less than 1 h," and to Clause (d). [F02-OS1.2] Applies to portion of Code text: "The <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ," [F04-OS1.3] Applies to portion of Code text: "c) roof assemblies shall have a <i>fire-resistance rating</i> not less than 1 h," and to Clause (d). (a), (d) [F03, F04-OP1.2] [F04-OP1.3] (a), (d) [F03, F04-OS1.2] [F04-OS1.3] (b) [F04-OP1.3] (b) [F04-OS1.3]
r5 3.2.2.50A.	Group D, up to 6 Storeys, Sprinklered
(1)	[F02,F04-OP1.2, OP1.3] Applies to portion of Code text: "...a) ...the <i>building</i> shall be <i>sprinklered</i> ..." [F02,F04-OS1.2,OP1.3] Applies to portion of Code text: "...a) ...the <i>building</i> shall be <i>sprinklered</i> ..."
(2)	[F03, F04-OP1.2] [F04-OP1.3] Applies to portion of Code text: "a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 1 h," and to Clause (f). [F03, F04-OS1.2] [F04-OS1.3] Applies to portion of Code text: "a) ... floor assemblies shall be <i>fire separations</i> with a <i>fire-resistance rating</i> not less than 1 h," and to Clause (f). (b), (c), (d), (f) [F04-OP1.3] (b), (c), (d), (f) [F04-OS1.3] (a), (f) [F03-OP1.2] [F04-OP1.2, OP1.3] (a), (f) [F03-OS1.2] [F04-OS1.2, OS1.3] (e) [F03, F06-OS1.2] [F05, F06-OS1.5] (e) [F03, F06-OP1.2]
(3)	
(4)	[F02, F03-OS1.2] [F10-OS1.5]
r5 3.2.2.51.	Group D, up to 6 Storeys, Sprinklered, Noncombustible Construction
(1)	[F02, F04-OP1.2, OP1.3] Applies to portion of Code text: " a) ...the <i>building</i> is <i>sprinklered</i> ," [F02, F04-OS1.2, OS1.3] Applies to portion of Code text: " a) ... the <i>building</i> is <i>sprinklered</i> ,"
(2)	[F02-OP1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ," [F02-OS1.2] Applies to portion of Code text: "... the <i>building</i> referred to in Sentence (1) shall be of <i>noncombustible construction</i> ," (a), (c) [F03, F04-OP1.2] [F04-OP1.3] (a), (c) [F03, F04-OS1.2] [F04-OS1.3] (b) [F04-OP1.3] (b) [F04-OS1.3]
3.2.2.52.	Group D, up to 4 Storeys, Sprinklered
(1)	[F02, F04-OP1.2, OP1.3] Applies to portion of Code text: " a) ...the <i>building</i> is <i>sprinklered</i> ," [F02, F04-OS1.2, OS1.3] Applies to portion of Code text: " a) ...the <i>building</i> is <i>sprinklered</i> ,"
(2)	(a), (c) [F03, F04-OP1.2] [F04-OP1.3] (a), (c) [F03, F04-OS1.2] [F04-OS1.3] (b) [F04-OP1.3] (b) [F04-OS1.3]

Acceptable Solutions	Objectives and Functional Statements
3.2.2.53.	Group D, up to 3 Storeys
(1)	
(2)	[F04-OP1.3] Applies to portion of Code text: "c) roof assemblies shall have, if of <i>combustible construction</i> , a <i>fire-resistance rating</i> not less than 45 min,..." and to Clause (d).
	[F04-OS1.3] Applies to portion of Code text: "c) roof assemblies shall have, if of <i>combustible construction</i> , a <i>fire-resistance rating</i> not less than 45 min,..." and to Clause (d).
	(a) [F03-OP1.2] Applies to the requirement that <i>noncombustible</i> floor assemblies be <i>fire separations</i> .
	(a) [F03-OS1.2] Applies to the requirement that <i>noncombustible</i> floor assemblies be <i>fire separations</i> .
	(a), (d) [F03, F04-OP1.2] [F04-OP1.3]
	(a), (d) [F03, F04-OS1.2] [F04-OS1.3]
	(b) [F04-OP1.3]
	(b) [F04-OS1.3]
3.2.2.54.	Group D, up to 3 Storeys, Sprinklered
(1)	[F02, F04-OP1.2, OP1.3] Applies to portion of Code text: " a)...the <i>building</i> is <i>sprinklered</i> ,"
	[F02, F04-OS1.2, OS1.3] Applies to portion of Code text: " a)...the <i>building</i> is <i>sprinklered</i> ,"
(2)	(a) [F03-OP1.2] Applies to the requirement that <i>noncombustible</i> floor assemblies be <i>fire separations</i> .
	(a) [F03-OS1.2] Applies to the requirement that <i>noncombustible</i> floor assemblies be <i>fire separations</i> .
	(a), (c) [F03, F04-OP1.2] [F04-OP1.3]
	(a), (c) [F03, F04-OS1.2] [F04-OS1.3]
	(b) [F04-OP1.3]
	(b) [F04-OS1.3]
3.2.2.55.	Group D, up to 2 Storeys
(1)	
(2)	[F03, F04-OP1.2] [F04-OP1.3]
	[F03, F04-OS1.2] [F04-OS1.3]
	(a) [F03-OP1.2] Applies to the requirement that <i>noncombustible</i> floor assemblies be <i>fire separations</i> .
	(a) [F03-OS1.2] Applies to the requirement that <i>noncombustible</i> floor assemblies be <i>fire separations</i> .
3.2.2.56.	Group D, up to 2 Storeys, Sprinklered
(1)	[F02, F04-OP1.2, OP1.3] Applies to portion of Code text: "a) ...the <i>building</i> is <i>sprinklered</i> ,"
	[F02, F04-OS1.2, OS1.3] Applies to portion of Code text: "a) ...the <i>building</i> is <i>sprinklered</i> ,"
(2)	[F03, F04-OP1.2] [F04-OP1.3]
	[F03, F04-OS1.2] [F04-OS1.3]

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Acceptable Solution	Objectives and Functional Statements
3.2.2.82.	Group F, Division 3, One Storey, Any Area, Low Fire Load Occupancy
(1)	
(2)	[F02-OP1.2] [F02-OS1.2]
3.2.2.83.	Group F, Division 3, Storage Garages up to 22 m High
(1)	[F02-OP1.2] Applies to portion of Code text: "A building used as a storage garage with all storeys constructed as open-air storeys and having on other occupancy above it is permitted to have its floor, wall, ceiling and roof assemblies constructed without a fire-resistance rating provided it is a) of noncombustible construction," [F02-OS1.2] Applies to portion of Code text: "A building used as a storage garage with all storeys constructed as open-air storeys and having on other occupancy above it is permitted to have its floor, wall, ceiling and roof assemblies constructed without a fire-resistance rating provided it is a) of noncombustible construction,"
3.2.3.1.	Limiting Distance and Area of Unprotected Openings
(1)	[F03-OP3.1]
(2)	
(3)	
(4)	
(5)	[F03-OP3.1]
(6)	[F03-OP3.1]
(7)	
(8)	[F03-OP3.1]
(9)	[F03-OP3.1]
(10)	[F03-OP3.1]
(11)	
(12)	
3.2.3.2.	Area of Exposing Building Face
(1)	
(2)	[F03-OP3.1]
(3)	
3.2.3.3.	Wall Enclosing Attic or Roof Space
(1)	
3.2.3.4.	Reserved
3.2.3.5.	Wall with Limiting Distance Less Than 1.2 m
(1)	[F03-OP3.1]
(2)	[F03-OP3.1]
3.2.3.6.	Combustible Projections
(1)	[F03-OP3.1]
(2)	[F03-OP3.1]
(3)	[F03-OP3.1]
(4)	[F03-OP3.1]
(5)	
3.2.3.7.	Construction of Exposing Building Face
(1)	[F02, F03-OP3.1]
(2)	Reserved
(3)	[F02, F03-OP3.1]
(4)	
(5)	[F02, F03-OP3.1]
(6)	[F02, F03-OP3.1]
(7), (8)	
3.2.3.8.	Protection of Exterior Building Face
(1)	[F02, F03-OP3.1]
(2)	
(3)	

r5

Acceptable Solution	Objectives and Functional Statements
3.2.3.9.	Protection of Structural Members
(1)	[F04-OP1.3] [F04-OS1.3]
(2)	
3.2.3.10.	Unlimited Unprotected Openings
(1)	[F03-OP3.1]
(2)	[F03-OP3.1]
3.2.3.11.	Low Fire Load, One Storey Building
(1)	(a) [F04-OP3.1] (b) [F03-OP3.1]
3.2.3.12.	Area Increase for Unprotected Openings
(1)	[F03-OP3.1]
3.2.3.13.	Protection of Exit Facilities
(1)	
(2)	
(3)	
(4)	[F06-OP1.2] [F05, F06-OS1.2]
3.2.3.14.	Wall Exposed to Another Wall
(1)	[F03-OP1.2] [F03-OP3.1] [F03-OS1.2]
(2)	[F03-OP1.2] [F03-OP3.1] [F03-OS1.2]
(3)	
3.2.3.15.	Wall Exposed to Adjoining Roof
(1)	[F03-OP1.2] [F03-OS1.2]
3.2.3.16.	Protection of Soffits
(1)	[F03-OP1.2] [F03-OS1.2]
(2)	[F03-OP1.2] [F03-OS1.2]
(3)	[F03-OP1.2] [F03-OS1.2]
(4)	[F02-OP1.2] [F02-OS1.2]
3.2.3.17.	Canopy Protection for Vertically Separated Openings
(1)	[F03-OP1.2] [F03-OS1.2]
(2)	[F03-OP1.2] [F03-OS1.2]
(3)	[F02-OP1.2] [F02-OS1.2]
3.2.3.18.	Covered Vehicular Passageway
(1)	[F03-OP3.1]
(2)	[F03-OP3.1]
3.2.3.19.	Walkway between Buildings
(1)	[F03-OP3.1]
(2)	[F02-OP3.1]
(3)	[F02, F12-OP3.1]

Acceptable Solution	Objectives and Functional Statements
3.2.4.17.	<b>System Monitoring</b>
(1)	[F12-OS1.2] [F11, F12-OS1.5] [F12-OP1.2]
(2)	[F13-OS1.2] [F11, F13-OS1.5] [F13-OP1.2]
3.2.4.18.	<b>Manual Pull Stations</b>
(1)	[F11-OS1.5]
(2)	[F02, F12-OS1.2] [F10, F12-OS1.5]
(3)	[F02, F12-OS1.2] [F10, F12-OS1.5]
(4)	[F11-OS1.5]
(5)	[F11-OS1.5]
(6)	[F81-OS1.2] [F11, F81-OS1.5]
(7)	[F11-OS1.5]
(8)	
3.2.4.19.	<b>Alert and Alarm Signals</b>
(1)	
(2)	[F11-OS1.5]
(3)	[F11-OS1.5]
(4)	[F11-OS1.5]
e2.1 (5), (6)	
3.2.4.20.	<b>Audibility of Alarm Systems</b>
(1)	[F11-OS1.5]
(2)	[F11-OS1.5]
(3)	[F11-OS1.5]
(4)	[F33-OS3.5]
(5)	[F11-OS1.5]
(6)	[F11-OS1.5]
(7)	[F11-OS1.5]
(8)	
(9)	[F11, F81-OS1.5]
(10)	[F11, F81-OS1.5]
(11)	[F11, F81-OS1.5]
(12)	[F11-OS1.5]
(13)	
(14)	[F11-OS1.5]
3.2.4.21.	<b>Visual Signals</b>
(1)	[F11-OS1.5]
(2)	[F11-OS1.5]
3.2.4.22.	<b>Smoke Alarms</b>
(1)	[F11, F81-OS1.5]
(2)	[F11-OS1.5]
(3)	[F11-OS1.5]
(4)	[F11-OS1.5]
(5)	[F11,F81-OS1.5]
(6)	[F11,F81-OS1.5]
(7)	
(8)	[F11-OS1.5]
(9)	[F81,F11-OS1.5]
(10)	[F81,F11-OS1.5]
(11)	
(12)	[F11-OS1.5]
r5 (13)	[F74-OA-2] [F11-OS1.5]

	Acceptable Solution	Objectives and Functional Statements
r <sub>5</sub>	(14)	
r <sub>5</sub>	(15)	[F74-OA-2] [F11-OS1.5]
	<b>3.2.4.23.</b>	<b>Voice Communication Systems</b>
	(1)	[F11, F12-OS3.7]
	(2)	[F11-OS1.5]
	(3)	[F11-OS1.5]
	(4)	F11-OS1.5] [F13-OS1.4,OS1.5]
	(5)	[F11-OS1.5]
	(6)	[F12-OS3.7]
	(7)	[F11-OS1.5]
	(8)	[F11-OS1.5]
	(9)	[F11-OS1.5]
	(10)	
	<b>3.2.5.1.</b>	<b>Access to Above Grade Storeys</b>
	(1)	[F12-OP1.2] [F12-OS1.2, OS1.5]
	(2)	[F12-OP1.2] [F12-OS1.2, OS1.5]
	(3)	[F12-OP1.2] [F12-OS1.2, OS1.5]
	<b>3.2.5.2.</b>	<b>Access to Basements</b>
e <sub>3</sub>	(1), (2)	[F12-OP1.2] [F12-OS1.2, OS1.5]
	<b>3.2.5.3.</b>	<b>Roof Access</b>
	(1)	[F12-OP1.2] [F12-OS1.2]
	(2)	[F12-OP1.2] [F12-OS1.2] [F05, F06, F10, F12-OS3.7]
	<b>3.2.5.4.</b>	<b>Access Routes</b>
	(1)	[F12-OP1.2] [F12-OS1.2, OS1.5]
	<b>3.2.5.5.</b>	<b>Location of Access Routes</b>
	(1)	[F12-OP1.2] [F06-OS1.1] [F12-OS1.2, OS1.5]
	(2)	[F12-OP1.2] [F12-OS1.2]
	(3)	
	(4)	[F12-OP1.2] [F12-OS1.2]
	<b>3.2.5.6.</b>	<b>Access Route Design</b>
	(1)	[F12-OP1.2] [F12-OS1.2]
r <sub>5</sub>	(2)	[F12-OP1.2] [F12-OS1.2]
	<b>3.2.5.7.</b>	<b>Water Supply</b>
	(1)	[F02-OP1.2] [F02-OP3.1] [F02-OS1.2]
	(2)	[F02, F12-OP1.2] [F02-OP3.1] [F02, F12-OS1.2]

	Acceptable Solution	Objectives and Functional Statements
e <sub>3</sub>	3.2.5.8. to 3.2.5.12.	Reserved
	3.2.5.13.	Automatic Sprinkler Systems
	(1)	[F02, F81, F82-OP1.2] [F02, F81, F82-OS1.2]
	(2)	[F02, F81, F82-OP1.2] [F02, F81, F82-OS1.2]
	(3)	[F02, F81, F82-OP1.2] [F02, F81, F82-OS1.2]
	(4)	[F02-OP1.2] [F02-OS1.2]
	(5)	[F81-OP1.2] [F81-OS1.2]
	(6)	[F02-OP1.2] [F02-OS1.2]
r <sub>5</sub>	(7)	[F02, F81, F82-OP1.2] [F02, F81, F82-OS1.2]
r <sub>5</sub>	(8)	[F81-OS3.3, OS3.6]
r <sub>5</sub>	(9)	[F02, F04 – OP1.2, OP1.3] [F02, F04 – OS1.2, OS1.3]
	3.2.5.14.	Combustible Sprinkler Piping
	(1)	[F06-OP1.2] [F06-OS1.2]
	(2)	[F02, F81-OP1.2] [F02, F81-OS1.2]
	(3)	[F06-OP1.2] [F06-OS1.2]
	(4)	[F06-OP1.2] [F06-OS1.2]
	(5)	
	3.2.5.15.	Sprinklered Service Space
	(1)	[F02-OP1.2] [F02-OS1.2]
	(2)	[F12-OP1.2] [F12-OS1.2]
	(3)	[F12-OS1.2] [F11, F12-OS1.5] [F12-OP1.2]
	(4)	[F02-OP1.2] [F02-OS1.2]
	(5)	
	3.2.5.16.	Fire Department Connections
	(1)	[F12-OP1.2] [F12-OS1.2]
	(2)	[F12-OP1.2] [F12-OS1.2]
	(3)	[F12-OP1.2] [F12-OS1.2]
	3.2.5.17.	Portable Fire Extinguishers
	(1)	[F02, F12, F81-OP1.2] [F02, F12, F81-OS1.2]
	(2)	[F12-OP1.2] [F12-OS1.2]

Acceptable Solution	Objectives and Functional Statements
3.2.5.18.	Protection from Freezing
(1)	[F81-OP1.2] [F81-OS1.2]
3.2.5.19.	Fire Pumps
(1)	[F02, F81-OP1.2] [F02, F81-OS1.2]
3.2.6.1.	Application
(1)	
3.2.6.2.	Limits to Smoke Movement
(1)	[F02-OP1.2] [F02-OS1.2, OS1.5]
(2)	[F06-OP1.2] [F06-OS1.2] [F05, F06-OS1.5]
(3)	[F06-OP1.2] [F06-OS1.2] [F05, F06-OS1.5]
(4)	[F03, F12-OP1.2] [F03 F12-OS1.2, OS1.5]
(5)	[F03-OP1.2] [F03-OS1.2, OS1.5]
(6)	[F02-OP1.2] [F02-OS1.2, OS1.5]
3.2.6.3.	Connected Buildings
(1)	[F03-OP1.2] [F03-OP3.1] [F03-OS1.2, OS1.5]
3.2.6.4.	Emergency Operation of Elevators
(1)	[F12-OP1.2] [F12-OS1.2, OS1.5]
(2)	[F12-OP1.2] [F12-OS1.2, OS1.5]
(3)	[F12-OP1.2] [F12-OS1.2, OS1.5]
(4)	[F12-OP1.2] [F12-OS1.2, OS1.5]
(5)	[F12-OP1.2] [F12-OS1.2, OS1.5]
(6)	[F12-OP1.2] [F12-OS1.2, OS1.5]
(7)	[F11-OS1.5]
3.2.6.5.	Elevator for Use by Firefighters
(1)	[F12, F06-OP1.2] [F12, F06-OS1.2, OS1.5]
(2)	[F12-OP1.2] [F12-OS1.2, OS1.5]
(3)	[F06-OP1.2] [F06-OS1.2, OS1.5]
(4)	[F12-OP1.2] [F12-OS1.2, OS1.5]
(5)	[F12-OP1.2] [F12-OS1.2, OS1.5]
(6)	[F06-OP1.2] [F06-OS1.2, OS1.5]

Acceptable Solution	Objectives and Functional Statements
(6)	[F10-OS3.7]
(7)	
<b>3.4.2.2.</b>	<b>Mezzanine Exiting</b>
(1)	[F05-OS1.5]
(2)	
(3)	
(4)	
<b>3.4.2.3.</b>	<b>Distance between Exits</b>
(1)	[F05, F10-OS1.5]
(2)	
(3)	
<b>3.4.2.4.</b>	<b>Travel Distance</b>
(1)	
(2)	
(3)	[F10-OS3.7]
(4)	
<b>3.4.2.5.</b>	<b>Location of Exits</b>
(1)	[F10-OS3.7]
(2)	
(3)	[F10-OS3.7]
<b>3.4.2.6.</b>	<b>Principal Entrance</b>
(1)	[F10-OS3.7]
<b>3.4.3.1.</b>	<b>Exit Width Based on Occupant Load</b>
(1)	
(2)	[F10-OS3.7]
<b>3.4.3.2.</b>	<b>Exit Width</b>
(1)	[F10-OS3.7]
(2)	[F10-OS3.7]
(3)	[F10-OS3.7]
(4)	
(5)	
(6)	[F10-OS3.7]
(7)	[F12-OP1.2]
	[F12-OS1.2]
	[F30-OS3.1] [F10, F12-OS3.7]
<b>3.4.3.3.</b>	<b>Exits from Interconnected Floor Space</b>
(1)	
<b>3.4.3.4.</b>	<b>Exit Width Reduction</b>
(1)	[F12-OS1.2]
	[F30-OS3.1] [F10, F12-OS3.7]
	[F12-OP1.2]
(2)	[F12-OS1.2]
	[F10, F12-OS3.7]
	[F12-OP1.2]
(3)	[F12-OS1.2]
	[F10, F12-OS3.7]
	[F12-OP1.2]
(4)	[F12-OS1.2]
	[F10, F12-OS3.7]
	[F12-OP1.2]

Acceptable Solution	Objectives and Functional Statements
(5)	[F12-OS1.2] [F10, F12-OS3.7] [F12-OP1.2]
3.4.3.5.	<b>Headroom Clearance</b>
(1)	[F12-OP1.2] [F12-OS1.2] [F30-OS3.1] [F10, F12-OS3.7]
(2)	
(3)	
(4)	[F12-OP1.2] [F12-OS1.2] [F30-OS3.1] [F10, F12-OS3.7]
(5)	[F12-OP1.2] [F12-OS1.2] [F30-OS3.1] [F10, F12-OS3.7]
3.4.4.1.	<b>Fire-Resistance Rating of Exit Separations</b>
(1)	[F03, F06-OS1.2] [F05, F06-OS1.5] [F03, F06-OP1.2]
(2)	
(3)	
(4)	
(5)	
3.4.4.2.	<b>Exits through Lobbies</b>
(1)	[F05, F06-OS1.5]
(2)	[F05, F06, F10, F12-OS1.5]
3.4.4.3.	<b>Exterior Passageway Exceptions</b>
(1)	[F05, F06, F10-OS1.5]
3.4.4.4.	<b>Integrity of Exits</b>
(1)	[F03, F06-OS1.2] [F05, F06-OS1.5] [F03, F06-OP1.2]
(2)	[F06-OS1.2] [F05, F06-OS1.5] [F06-OP1.2]
(3)	[F06-OS1.2] [F05, F06-OS1.5] [F06-OP1.2]
(4)	[F06-OS1.2] [F05, F06-OS1.5] [F43-OS3.7] [F06-OP1.2]
(5)	[F03, F06-OP1.2] [F03, F06-OS1.2] [F05, F06-OS1.5]
(6)	[F12-OS1.2] [F05, F10, F12-OS1.5] [F30-OS3.1] [F31-OS3.2] [F32-OS3.3] [F43-OS3.4] [F10, F12-OS3.7] [F12-OP1.2]
(7)	[F06-OS1.2] [F05, F06-OS1.5] [F06-OP1.2] [F43-OS3.7]
(8)	[F06-OS1.2] [F05, F06-OS1.5] [F06-OP1.2]
(9)	[F06-OS1.2] [F05, F06-OS1.5] [F06-OP1.2]
(10)	[F81-OS1.5] [F81-OS3.7] [F81-OP1.2]

R5  
R5  
R5



Acceptable Solution	Objectives and Functional Statements
<b>3.4.5.1.</b>	<b>Exit Signage</b>
(1)	[F10-OS3.7]
(2)	[F10-OS3.7]
(3)	[F10,F81-OS3.7]
(4)	[F10, F81-OS3.7]
(5)	[F10-OS3.7]
(6)	[F10-OS3.7]
(7)	[F10-OS3.7]
(8)	[F10-OS3.7]
(9)	F10-OS3.7]
(10)	
<b>3.4.5.2.</b>	<b>Signs within Exit Facilities</b>
(1)	[F10-OS3.7]
(2)	[F10-OS3.7]
<b>R4 3.4.6.1.</b>	<b>Surface Finish of Ramps and Stairs</b>
(1)	(a), (b) [F30-OS3.1] [F10-OS3.7]
<b>R5 (2)</b>	[F73-OA1]
(3)	[F12-OS1.2, OS1.5] [F30-OS3.1] [F10, F12-OS3.7] [F12-OP1.2]
<b>3.4.6.2.</b>	<b>Minimum Number of Risers</b>
(1)	[F30-OS3.1]
<b>3.4.6.3.</b>	<b>Maximum Vertical Rise of Stair Flights and Required Landings</b>
(1)	[F10-OS3.7]
(2)	[F10-OS3.7] [F30-OS3.1]
(3)	
<b>3.4.6.4.</b>	<b>Dimensions of Landings</b>
(1)	[F10,F12-OS3.7][F30-OS3.1] [F12-OP1.2] [F12-OS1.2,OS1.5]
(2)	[F10,F12-OS3.7] [F30-OS3.1]
(3)	[F10,F12-OS3.7] [F30-OS3.1]
(4)	
<b>3.4.6.5.</b>	<b>Handrails</b>
(1)	[F30-OS3.1] [F10-OS3.7]
(2)	[F30-OS3.1] [F10-OS3.7]
(3)	[F30-OS3.1] [F10-OS3.7]
(4)	
(5)	[F30-OS3.1] [F10-OS3.7]
(6)	
(7)	
(8)	[F30-OS3.1] [F10-OS3.7]
(9)	[F30-OS3.1] [F10-OS3.7]
(10)	[F30-OS3.1] [F10-OS3.7] [F73-OA1]
(11)	[F30-OS3.1] [F10-OS3.7]
(12)	[F20-OS3.1,OS3.7]
(13)	[F30-OS3.1][F10-OS3.7]
(14)	[F30-OS3.1] [F10-OS3.7] [F73-OA1]
<b>3.4.6.6.</b>	<b>Guards</b>
(1)	[F30-OS3.1] [F10-OS3.7]

Acceptable Solution	Objectives and Functional Statements
(2)	[F30-OS3.1] [F10-OS3.7]
(3)	[F30-OS3.1] [F10-OS3.7]
(4)	
(5)	[F30-OS3.1]
(6)	
(7)	[F30-OS3.1]
(8)	[F30-OS3.1]
<b>3.4.6.7.</b>	<b>Ramp Slope</b>
(1)	[F30-OS3.1] [F10-OS3.7]
<b>3.4.6.8.</b>	<b>Treads and Risers</b>
(1)	[F30-OS3.1] [F10-OS3.7]
(2)	[F30-OS3.1] [F10-OS3.7]
(3)	[F30-OS3.1] [F10-OS3.7]
(4)	[F30-OS3.1] [F10-OS3.7]
(5)	[F30-OS3.1] [F10-OS3.7]
(6)	[F30-OS3.1] [F10-OS3.7]
(7)	[F30-OS3.1] [F10-OS3.7]
(8)	[F30-OS3.1]
(9)	[F10-OS3.7][F30-OS3.1]
(10)	[F30-OS3.1]
<b>3.4.6.9.</b>	<b>Curved Stairs</b>
(1)	[F30-OS3.1] [F10-OS3.7]
(2)	[F30-OS3.1] [F10-OS3.7]
<b>3.4.6.10.</b>	<b>Horizontal Exits</b>
(1)	[F10-OS3.7]
(2)	[F10-OS3.7]
(3)	
(4)	[F10, F73-OS3.7]
(5)	[F10-OS3.7]
(6)	
(7)	[F10-OS1.5]
<b>3.4.6.11.</b>	<b>Doors</b>
(1)	[F30-OS3.1] [F10-OS3.7]
(2)	[F30-OS3.1] [F10-OS3.7] Applies to portion of Code text: "No <i>exit</i> door shall open directly onto a step..." [F10, F81-OS3.7] Applies where there is a danger of blockage from ice or snow.
(3)	[F10-OS3.7]
(4)	[F10, F12-OS3.7]
<b>3.4.6.12.</b>	<b>Direction of Door Swing</b>
(1)	[F10-OS3.7]
(2)	[F10-OS3.7]
(3)	
<b>3.4.6.13.</b>	<b>Self-Closing Devices</b>
(1)	[F06-OS1.2] [F05, F06-OS1.5] [F03, F06-OP1.2]
<b>3.4.6.14.</b>	<b>Sliding Doors</b>
(1)	
(2)	[F12-OS3.7]
<b>3.4.6.15.</b>	<b>Revolving Doors</b>
(1)	(a) [F30-OS3.1] [F10-OS3.7] (b) [F10, F12-OS3.7] (c) [F10-OS3.7] (d) [F30-OS3.1] [F10-OS3.7]

Acceptable Solution	Objectives and Functional Statements	
(6)	[F30-OS3.1] [F74-OA2]	
(7)	[F20-OS3.1] [F74-OA2]	
(8)	[F20-OS3.1] [F74-OA2]	
(9)	[F74-OA2]	
(10)	[F74-OA2] (b)(vi) [F36-OS3.6] (d) [F30-OS3.1]	
<b>3.8.3.9.</b>	<b>Water Closets</b>	
(1)	[F72-OH2.1] [F74-OA2]	
R4	(2)	[F74-OA2]
R4	<b>3.8.3.10.</b>	<b>Urinals</b>
(1)	[F74-OA2]	
(2)	[F74-OS2] (b) [F31-OS3.2]	
(3)	[F74-OA2]	
(4)	[F74-OA2] [F101-OH3.2]	
(5)	[F74-OA2]	
<b>3.8.3.11.</b>	<b>Lavatories</b>	
(1)	[F71-OH2.3] [F74-OA2] (d) [F31-OS3.2]	
(2)	[F74-OA2]	
(3)		
R4	(4)	
R4	(5)	[F74-OA2]
R4	<b>3.8.3.12.</b>	<b>Universal Washrooms</b>
(1)	[F72-OH2.1] [F71-OH2.3] [F74-OA2] (b) [F74-OA2 Applies to portion of Code text: "... b) ... a door capable of being locked from the inside ..." (b) [F10-OS3.7] (g) [F30-OS3.1] Applies to the requirement for a coat hook. (j) [F73-OA1] (k) [F131-OR2]	
(2)	[F36-OS3.6]	
(3)		
(4)	[F20-OS3.1]	
(5)	[F74-OA2.1] [F71-OH2.3] (b) [F20-OS3.1]	
(6)		
R4	<b>3.8.3.13.</b>	<b>Showers and Bathtubs</b>
(1)	[F74-OA2]	
(2)	[F74-OA2] (e)(iii) [F20-OS3.1]	
(3)		

Acceptable Solutions	Objectives and Functional Statements
(4)	[F74-OA2]
	(c) [F30-OS3.1]
	(d) [F30-OS3.1]
(5)	[F74-OA2]
3.8.3.14.	Reserved
3.8.3.15.	Shelves or Counters for Telephones
(1)	[F74-OA2]
(2)	[F74-OA2]
(3)	[F74-OA2]
r <sub>4</sub> (4)	[F74-OA2]
r <sub>4</sub> (5)	
r <sub>4</sub> 3.8.3.16.	Drinking Fountains
(1)	[F74-OA2]
(2)	[F74-OA2]
(3)	[F74-OA2]
(4)	
r <sub>4</sub> 3.8.3.17.	Platforms
(1)	[F30-OS3.1]
(2)	
r <sub>4</sub> 3.8.3.18.	Tactile Attention Indicators
(1)	[F30-OS3.1]
r <sub>5</sub> (2)	[F30-OS3.1]
3.9.1.1.	Application
(1)	
3.9.1.2.	Heating Systems
(1)	
3.9.2.1.	Flame-Spread Rating
(1)	[F02-OP1.2]
	[F02-OS1.2]
3.9.3.1.	Building Areas
(1)	[F02-OP1.1]
	[F02-OS1.1]
(2)	
3.9.3.2.	Spatial Separations
(1)	[F03-OP3.1]
	[F03-OS1.1]
(2)	[F03-OP3.1]
	[F03-OS1.1]
3.9.3.3.	Fire Alarm Systems
(1)	[F12-OS1.2, OS1.5]
(2)	
(3)	
3.9.3.4.	Provisions for Firefighting
(1)	[F12-OP1.2]
	[F12-OS1.2, OS1.5]
3.9.3.5.	Portable Fire Extinguishers
(1)	[F02, F12, F81-OP1.2]
	[F02, F12, F81-OS1.2]
3.9.3.6.	Means of Egress
(1)	

Acceptable Solution	Objectives and Functional Statements
(7)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(8)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
<b>4.1.8.4.</b>	<b>Site Properties</b>
(1)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(2)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(3)	
(4)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(5)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(6)	
(7)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
<b>4.1.8.5.</b>	<b>Importance Factor</b>
(1)	[F20-OS2.1] [F20-OP2.1, OP2.3] [F22-OP2.4]
<b>4.1.8.6.</b>	<b>Structural Configuration</b>
(1)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(2)	
(3)	
<b>4.1.8.7.</b>	<b>Methods of Analysis</b>
(1)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
<b>4.1.8.8.</b>	<b>Direction of Loading</b>
(1)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
<b>4.1.8.9.</b>	<b>SFRS Force Reduction Factors, System Overstrength Factors, and General Restrictions</b>
(1)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(2)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(3)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(4)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(5)	
<b>4.1.8.10</b>	<b>Additional System Restrictions</b>
(1)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(2)	(a) [F20-OP2.3] [F22-OP2.4] (b) [F20-OP2.3] [F22-OP2.4] (c) [F20-OP2.3] [F22-OP2.4] (d) [F20-OP2.3] [F22-OP2.4]
(3)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(4)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]

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Acceptable Solution	Objectives and Functional Statements
4.1.8.11.	Equivalent Static Force Procedure for Structures Satisfying the Conditions of Article 4.1.8.7.
(1)	
(2)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(3)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(4)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(5)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(6)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(7)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(8)	(a) [F20-OS2.1] (a) [F20-OP2.1] [F22-OP2.4] (b) [F20-OS2.1] (b) [F20-OP2.1] [F22-OP2.4]
(9)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(10)	(a), (b) [F20-OP2.1] [F22-OP2.4] (a), (b) [F20-OS2.1]
<b>r<sub>5</sub></b> (11)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
4.1.8.12.	Dynamic Analysis Procedure
(1)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(2)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(3)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(4)	(a) [F20-OP2.1] [F22-OP2.4] (a) [F20-OS2.1]
(5)	[F20-OS2.1] [F20-OP2.1, OP2.3] [F22-OP2.4]
(6)	
(7)	[F20-OS2.1] [F20-OP2.1, OP2.3] [F22-OP2.4]
(8)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
<b>e<sub>3</sub></b> (9), (10)	[F20-OS2.1] [F20-OP2.1] [F22-OP2.4]
(11)	
<b>r<sub>5</sub></b> (12)	
4.1.8.13.	Deflections and Drift Limits
(1)	[F22-OS2.3, OS2.4] [F22-OP2.3, OP2.4]
(2)	[F22-OS2.3, OS2.4] [F22-OP2.3, OP2.4]
(3)	[F22-OS2.3, OS2.4] [F22-OP2.3, OP2.4]

Table 7  
Objectives and Functional Statements Attributed to the Acceptable Solutions in Part 7 of Division B

Acceptable Solution	Objective and Functional Statement
7.1.1.1.	Scope
(1)	
7.1.2.1.	Application
(1)	
(2)	
7.1.3.1.	Definitions
(1)	
7.1.4.1.	Facilities Required
(1)	
7.1.4.2.	Floor Drains
(1)	[F62-OH1.3] [F62-OH2.1] [F62, F72-OP5]
(2)	
(3)	[F62-OH1.3] [F62-OH2.1] [F41-OH2.4] Applies to floor drains in garbage rooms. [F62, F72-OP5]
7.1.5.1.	Sanitary Drainage Systems
(1)	[F72-OH2.1]
(2)	[F72-OH2.1] [F72-OP5]
7.1.5.2.	Storm Drainage Systems
(1)	[F72-OP5]
7.1.5.3.	Water Distribution Systems
(1)	[F46, F70-OH2.2]
(2)	
(3)	
7.1.5.4.	Separate Services
(1)	[F70-OH2.1] [F81-OH2.2] Applies to water service pipe. [F81-OH2.6] Applies to drainage pipe. [F81-OP5]
(2)	
(3)	
(4)	[F81-OH2.2] Applies to water service pipe. [F81-OH2.6] Applies to drainage pipe. [F81-OP5]
7.1.5.5.	Private Sewers and Private Water Supply
(1)	[F62, F70-OH2.1] [F81-OH2.2] [F81-OP5]
(2)	[F62, F70-OH2.1] [F81-OH2.6] [F81-OP5]
7.1.6.1.	Lighting and Ventilation Requirements
(1)	[F30-OS3.1] Applies to the requirement for lighting. [F40, F41, F50-OH1.1] Applies to the requirement for ventilation.

Acceptable Solution	Objective and Functional Statement
r <sub>5</sub>	<b>7.1.6.2. Accessibility</b>
	(1) [F40-OH2.1] [F71-OH2.3] [F41, F81-OH2.4] [F82-OH2.1, OH2.2, OH2.3, OH2.4] Applies to the need for maintenance. [F81-OP5]
	<b>7.1.7.1. Structural Movement</b>
(1) [F23-OS3.1] [F81-OH1.3, OH2.1, OH2.4, OH2.6]	
	<b>7.2.1.1. Exposure of Materials</b>
	(1) [F80-OH2.1, OH2.2, OH2.3, OH2.4] [F80-OP5]
	(2) [F80-OH2.1] [F80-OP5]
	<b>7.2.1.2. Restrictions on Re-Use</b>
	(1) [F41, F81-OH1.1] Applies to vent pipes. [F81-OH1.3] Applies to water pipes. [F81, F113-OH2.1] [F46, F70-OH2.2] [F71, F72-OH2.3] Applies to equipment. [F43-OS3.4] Applies to equipment. [F81, F113-OP5] Applies to drainage pipes. [F81-OP5] Applies to water pipes.
	(2) [F70-OH2.2]
e <sub>3</sub>	<b>7.2.1.3. Identification and Certification</b>
	(1) to (4)
	<b>7.2.1.4. Pipe or Piping</b>
(1)	
	<b>7.2.1.5. Withstanding Pressure</b>
	(1) [F20, F81, F113-OE] [F20, F81, F113-OH2.1, OH2.3] [F20, F81, F113-OP5]
	<b>7.2.2.1. Surface Requirements</b>
(1) [F41-OH2.4]	
	<b>7.2.2.2. Conformance to Standards</b>
	(1)
	(2) [F80, F81-OH2.1, OH2.4] [F80, F81-OP5]
	(3) [F80, F81-OH2.1, OH2.4] [F80, F81-OP5]
	(4) [F80, F81-OH2.1, OH2.4] [F80, F81-OP5]
	(5) [F80, F81-OH2.1, OH2.4] [F80, F81-OP5]
	(6) [F80, F81-OH2.1, OH2.4] [F80, F81-OP5]
	(7) [F80, F81-OH2.1, OH2.4] [F80, F81-OP5]
	(8) [F80, F81-OH2.1, OH2.4] [F80, F81-OP5]
	<b>7.2.2.3. Showers</b>
	(1) [F80-OH2.1] [F80-OP5]
	(2) [F80-OH2.1, OH2.4] [F40-OP5]



r<sub>5</sub>

Acceptable Solution	Objective and Functional Statement
8.9.2.5.	Class 5 Sewage Systems
(1)	[F82, F110-OE] [F82, F110-OH5]
(2)	[F110-OE] [F110-OH5]
8.9.3.1.	Scope
(1)	
8.9.3.2.	General
(1)	[F110, F111-OE] [F110, F111-OH2.1] [F110, F111-OH5]
(2)	[F110, F111-OE] [F110, F111-OH2.1] [F110, F111-OH5]
8.9.3.3.	Interceptors
(1)	[F110, F111-OE] [F110, F111-OH2.1] [F110, F111-OH5]
8.9.3.4.	Class 4 Sewage Systems
(1)	[F110, F111-OE] [F110, F111-OH2.1] [F110, F111-OH5]
8.9.3.5.	Pressurized Distribution Systems
(1)	[F110, F111-OE] [F110, F111-OH2.1] [F110, F111-OH5]

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Acceptable Solution	Objectives and Functional Statements
<b>9.8.9.1.</b>	<b>Loads on Stairs and Ramps</b>
(1)	[F20-OS2.1] [F22-OH4]
<b>9.8.9.2.</b>	<b>Exterior Concrete Stairs</b>
(1)	[F22-OS3.1, OS3.7]
(2)	
(3)	
<b>9.8.9.3.</b>	<b>Exterior Wood Steps</b>
(1)	[F80-OS2.3] [F80-OS3.1, OS3.7]
<b>9.8.9.4.</b>	<b>Wooden Stair Stringers</b>
(1)	[F20-OS2.1] [F22-OH4]
(2)	[F20-OS2.1] [F22-OH4]
<b>9.8.9.5.</b>	<b>Treads</b>
(1)	[F20-OS2.1] [F22-OH4]
(2)	[F20-OS2.1] [F22-OH4]
<b>9.8.9.6.</b>	<b>Finish for Treads, Landings and Ramps</b>
(1)	[F30, F80-OS3.1] [F10-OS3.7]
(2)	
(3)	[F30-OS3.1] [F10-OS3.7]
(4)	[F73-OA1]
(5)	[F30-OS3.1] [F10-OS3.7]
<b>9.8.10.1.</b>	<b>Design</b>
(1)	[F20-OS2.1] [F22-OS3.1, OS3.7]
<b>9.8.10.2.</b>	<b>Anchorage</b>
(1)	[F20-OH1.1, OH1.2, OH1.3] [F20-OS2.1] [F22-OS3.1, OS3.7]
<b>9.8.10.3.</b>	<b>Prevention of Damage Due to Frost</b>
(1)	[F21-OH1.1, OH1.2, OH1.3] [F21-OS2.1] [F21-OS3.1]
<b>9.9.1.1.</b>	<b>Application</b>
(1)	
<b>9.9.1.2.</b>	<b>Fire Protection</b>
(1)	
<b>9.9.1.3.</b>	<b>Occupant Load</b>
(1)	
<b>9.9.2.1.</b>	<b>Types of Exits</b>
(1)	
(2)	
(3)	[F04-OP1.2, OP1.3] [F06, F12, F81-OP1.2] [F80-OP2.3] [F04-OS1.2, OS1.3] [F05, F10, F12-OS1.5] [F06-OS1.2] [F20, F80-OS2.1] [F80, F81-OS2.3] [F20, F30-OS3.1] [F10, F12-OS3.7]
(4)	

r5  
r4

Acceptable Solution	Objectives and Functional Statements
9.9.2.2.	Purpose of Exits
(1)	[F10-OS3.7] Applies to portion of Code text "An <i>exit</i> shall be designed for no purpose other than exiting ..."
9.9.2.3.	Elevators, Slide Escapes and Windows as Means of Egress
(1)	[F10-OS3.7]
(2)	
9.9.2.4.	Principle Entrances
(1)	[F10-OS3.7]
9.9.2.5.	Front Edge of Stair Treads
(1)	[F30-OS1.5] [F30-OS3.1]
9.9.2.6.	Exterior Exit Stairs that Serve a Hotel
(1)	[F30-OS1.5] [F30-OS3.1]
9.9.3.1.	Application
(1)	
9.9.3.2.	Exit Width
(1)	[F10-OS3.7]
9.9.3.3.	Width of Corridors
(1)	[F30-OS3.1] [F10-OS3.7]
9.9.3.4.	Clear Height
(1)	[F30-OS3.1] [F10-OS3.7]
(2)	[F30-OS3.1] [F10-OS3.7]
9.9.4.1.	Application
(1)	
9.9.4.2.	Fire Separation for Exits
(1)	[F03-OP1.2] [F03-OS1.2] [F05-OS1.5]
(2)	[F03-OP1.2] [F03-OS1.2] [F05-OS1.5]
(3)	[F05-OS1.5]
(4)	[F03-OS1.2] [F05-OS1.5]
(5)	
9.9.4.3.	Wired Glass or Glass Block
(1)	
(2)	[F05-OS1.5]
(3)	
9.9.4.4.	Openings Near Unenclosed Exit Stairs and Ramps
(1)	[F05-OS1.5]
9.9.4.5.	Openings in Exterior Walls of Exits
(1)	[F05-OS1.5]
9.9.4.6.	Openings Near Exit Doors
(1)	
(2)	[F05-OS1.5]
9.9.4.7.	Stairways in Group D or E Buildings
(1)	[F05-OS1.5]
9.9.5.1.	Application
(1)	
9.9.5.2.	Occupancies in Corridors
(1)	[F10-OS3.7]

r5

Acceptable Solution	Objectives and Functional Statements
(3)	
(4)	[F03-OP3.1]
(5)	
<b>9.10.15.5.</b>	<b>Construction of Exposing Building Face of Houses</b>
(1)	[F02, F03-OP3.1]
(2)	[F02, F03-OP3.1]
(3)	[F02, F03-OP3.1]
(4)	
(5)	[F03-OP3.1]
(6)	
<b>9.10.16.1.</b>	<b>Required Fire Blocks in Concealed Spaces</b>
e <sub>3</sub> (1) to (4)	[F03-OP1.2]
	[F03-OS1.2]
(5)	[F02, F03-OP1.2]
	[F02, F03-OS1.2]
(6)	[F02, F03-OP1.2]
	[F02, F03-OS1.2]
<b>9.10.16.2.</b>	<b>Required Fire Blocks in Wall Assemblies</b>
(1)	[F03-OP1.2]
	[F03-OS1.2]
(2)	
<b>9.10.16.3.</b>	<b>Fire Block Materials</b>
(1)	[F03-OP1.2]
	[F03-OS1.2]
(2)	[F03-OP1.2]
	[F03-OS1.2]
(3)	[F04-OP1.2]
	[F04-OS1.2]
<b>9.10.16.4.</b>	<b>Penetration of Fire Blocks</b>
(1)	[F03-OP1.2]
	[F03-OS1.2]
<b>9.10.17.1.</b>	<b>Flame-Spread Rating of Interior Surfaces</b>
(1)	[F02-OS1.2]
(2)	
(3)	
<b>9.10.17.2.</b>	<b>Ceilings in Exits or Public Corridors</b>
(1)	[F05-OS1.5]
<b>9.10.17.3.</b>	<b>Walls in Exits</b>
(1)	[F05-OS1.5]
(2)	[F05-OS1.5]
<b>9.10.17.4.</b>	<b>Exterior Exit Passageways</b>
(1)	[F05-OS1.5]
<b>9.10.17.5.</b>	<b>Walls in Public Corridors</b>
(1)	[F05-OS1.5]
<b>9.10.17.6.</b>	<b>Calculation of Wall and Ceiling Areas</b>
(1)	
<b>9.10.17.7.</b>	<b>Corridors Containing an Occupancy</b>
(1)	
<b>9.10.17.8.</b>	<b>Light Diffusers and Lenses</b>
(1)	

Acceptable Solution	Objectives and Functional Statements
9.10.17.9.	Combustible Skylights
(1)	[F02F05-OS1.5]
9.10.17.10.	Protection of Foamed Plastics
(1)	(a), (b), (c) [F01, F02, F05-OS1.5]
(2)	[F01, F02-OS1.2]
9.10.17.11.	Walls and Ceilings in Bathrooms
(1)	
9.10.17.12.	Coverings or Linings of Ducts
(1)	
9.10.18.1.	Access Provided through a Firewall
(1)	[F11-OS1.5]
9.10.18.2.	Fire Alarm System Required
(1)	[F11-OS1.5]
(2)	
9.10.18.3.	Design and Installation Requirements
e2.1 (1), (2)	
9.10.18.4.	Rooms and Spaces Requiring Heat Detectors or Smoke Detectors
(1)	[F11-OS1.5]
(2)	[F11-OS1.5]
(3)	[F02-OS1.2] Applies to <i>sprinklered buildings</i> . [F11-OS1.5] Applies to the supervision of the system and flow alarm.
(4)	[F11-OS1.5]
9.10.8.5.	Smoke Detectors in Recirculating Air Handling Systems
(1)	[F03-OS1.2]
9.10.8.6.	Portions of Buildings Considered as Separate Buildings
(1)	[F03-OS1.2]
(2)	[F11-OS1.2]
9.10.18.7.	Central Vacuum Systems
(1)	[F03-OS1.2]
9.10.18.8.	Open-Air Storage Garages
(1)	
9.10.18.9.	Fire Alarm System in a Hotel
(1)	[F11-OS1.5]
9.10.18.10.	Commissioning of Life Safety and Fire Protection Systems
(1)	[F02, F81, F82-OS1.2, OS1.5] [F02, F81, F82-OP1.2]
(2)	
9.10.19.1.	Required Smoke Alarms
r5 (1)	[F11, F81-OS1.5]
(2)	[F11, F81-OS1.5] [F74-OA2]
r5 (3)	
r5 (4)	[F11, F81-OS1.5] [F74-OA2]
r5 (5)	[F11, F81-OS1.5] [F74-OA2]
9.10.19.2.	Sound Patterns of Smoke Alarms
(1)	[F11-OS1.5]
9.10.19.3.	Location of Smoke Alarms
e3 (1)	[F11-OS1.5]
(2)	[F11, F81-OS1.5]
r4 (3)	[F11-OS1.5]

	Acceptable Solution	Objectives and Functional Statements
r <sub>5</sub>	(4)	
r <sub>5</sub>	(5)	[F11, F81-OS1.5] [F74-OA2]
r <sub>5</sub>	(6)	[F11-OS1.5]
	<b>9.10.19.4.</b>	<b>Power Supply</b>
	(1)	[F81-OS1.5]
	(2)	
	(3)	[F81-OS1.5]
	(4)	
	<b>9.10.19.5.</b>	<b>Interconnection of Smoke Alarms</b>
	(1)	[F11-OS1.5]
	<b>9.10.19.6.</b>	<b>Silencing of Smoke Alarms</b>
	(1)	[F11, F81-OS1.5]
	(2)	
	<b>9.10.19.7.</b>	<b>Instructions for Maintenance and Care</b>
	(1)	[F82-OS1.5]
	<b>9.10.20.1.</b>	<b>Windows or Access Panels Required</b>
e <sub>3</sub>	(1), (2)	[F12-OP1.2] [F12-OS1.2, OS1.5]
	(3)	
	<b>9.10.20.2.</b>	<b>Access to Basements</b>
	(1)	[F12-OP1.2] [F12-OS1.2, OS1.5]
	(2)	[F12-OP1.2] Applies to portion of Code text: "Access required in Sentence (1) ... provides an opening not less than 1 100 mm high and 550 mm wide, the sill of which shall not be more than 900 mm above the floor." [F12-OS1.2, OS1.5] Applies to portion of Code text: "Access required in Sentence (1) ... provides an opening not less than 1 100 mm high and 550 mm wide, the sill of which shall not be more than 900 mm above the floor."
	(3)	
	<b>9.10.20.3.</b>	<b>Fire Department Access to Buildings</b>
e <sub>3</sub>	(1), (2)	[F12-OP1.2] [F12-OS1.2, OS1.5]
e <sub>2</sub>	<b>9.10.20.4.</b>	<b>Portable Fire Extinguishers</b>
	(1)	[F02, F12, F81-OP1.2] [F81, F02, F12-OS1.2]
	<b>9.10.20.5.</b>	<b>Freeze Protection for Fire Protection Systems</b>
	(1)	[F02, F81-OP1.2] [F02, F81-OS1.2]
	<b>9.10.21.1</b>	<b>Requirements for Construction Camps</b>
	(1)	
	<b>9.10.21.2.</b>	<b>Separation of Sleeping Rooms</b>
	(1)	[F03-OP1.2] [F03-OS1.2]
	<b>9.10.21.3.</b>	<b>Floor Assemblies Between the First and Second Storey</b>
	(1)	[F03-OP1.2] [F03-OS1.2, OS1.5]
	<b>9.10.21.4.</b>	<b>Walkways Connecting Buildings</b>
	(1)	[F03-OP1.2] [F03-OP3.1] [F03, F06-OS1.2, OS1.5]
	<b>9.10.21.5.</b>	<b>Spatial Separations</b>
	(1)	[F03-OP3.1]

Acceptable Solution	Objectives and Functional Statements
9.10.21.6.	Flame-Spread Ratings
(1)	[F05-OS1.2, OS1.5]
(2)	
9.10.21.7.	Smoke Detectors
(1)	[F11-OS1.5]
9.10.21.8.	Portable Fire Extinguishers
(1)	[F02, F12, F81-OP1.2] [F02, F12, F81-OS1.2]
9.10.21.9.	Hose Stations
(1)	[F02, F12, F81-OP1.2] [F02, F12, F81-OS1.2]
(2)	[F12-OP1.2] [F12-OS1.2]
(3)	[F12-OP1.2] [F12-OS1.2]
9.10.22.1.	Installation of Ranges
(1)	
(2)	
9.10.22.2.	Vertical Clearances above Cooktops
(1)	
(2)	[F01-OS1.1, OS1.2]
9.10.22.3.	Protection Around Cooktops
(1)	[F01-OS1.1, OS1.2]
(2)	
(3)	[F01-OS1.1, OS1.2]
9.11.1.1.	Determination of Sound Transmission Class Ratings
(1)	[F56-OH3.1]
9.11.2.1.	Minimum Sound Transmission Class Ratings
(1)	[F56-OH3.1]
(2)	[F56-OH3.1]
9.11.2.2.	Building Services in an Assembly
(1)	[F56-OH3.1]
9.12.1.1.	Removal of Topsoil and Organic Matter
(1)	[F20, F40, F41-OH1.1]
(2)	[F81-OP2.3, OP2.4] [F81-OH1.1, OH1.2, OH1.3] Applies to elements that support or are part of an environmental separator. [F81-OS1.2] Applies to assemblies required to provide fire resistance. [F81-OS2.3] [F81-OS3.1] Applies to floors and elements that support floors.
(3)	[F20-OP2.2] [F20, F21-OP2.3, OP2.4] [F20-OS2.2, OS2.3] [F21-OS2.3] [F20, F21-OS3.1] Applies to floors and elements that support floors. [F20, F21, F40, F41-OH1.1] [F20, F21-OH1.2, OH1.3] Applies to elements that support or are part of an environmental separator. [F20, F21-OH4] Applies to floors and elements that support floors.
9.12.1.2.	Standing Water
(1)	[F60-OP2.2, OP2.3, OP2.4] [F60-OS2.2, OS2.3] [F60-OS3.1] Applies to floors and elements that support floors. [F60-OH1.1, OH1.2, OH1.3] Applies to elements that support or are part of an environmental separator. [F60-OH4] Applies to floors and elements that support floors.



Acceptable Solution	Objectives and Functional Statements
(1) (Cont'd)	<p>9.7. Applies to windows and skylights in Part 9 <i>buildings</i>. [F55, F61, F62, F63, F80, F81, F82-OH1.1] [F51, F53, F54, F55, F61, F62, F63, F80, F82-OH1.2] [F61, F62, F63-OH1.3] [F102-OH7] [F42-OP2.3] [F03, F20-OS1.2] [F10-OS1.5] [F20-OS2.1] [F20, F21, F42, F61, F63-OS2.3] [F30-OS3.1] [F10, F30-OS3.7] [F34-OS4.1] [F131-OR2]</p> <p>9.10.17. Applies to flame spread limits in Part 9 <i>buildings</i>. [F01, F02-OS1.2] [F01, F02, F05-OS1.5]</p> <p>9.31. Applies to plumbing facilities serving Part 9 dwelling units. [F44, F62-OH1.1] [F40, F41, F62-OH1.2, OH1.3] [F70, F71, F72, F80-OH2.1] [F41-OH2.2] [F70, F71, F72, F80, F81-OH2.3] [F01-OS1.1] [F31, F80-OS2.3] [F20-OS3.1] [F23-OS3.4]</p> <p>9.32. Applies to ventilation in Part 9 residential occupancies. [F40, F42, F50, F52, F53, F61, F80, F81, F82-OH1.1] [F42, F51, F52, F80, F81-OH1.2] [F42, F80-OH2.5] [F82-OP1.1] [F131-OR2] [F02, F03, F80, F82-OS1.1] [F42, F53, F61, F63-OS2.3] [F40, F43, F44, F50, F53, F81-OS3.4]</p> <p>9.34.1. [F01-OS1.1] [F10-OS3.1] [F32, F81-OS3.3] Applies to electrical facilities in Part 9 <i>buildings</i>.</p> <p>9.34.2. [F30-OS3.1] Applies to lighting outlets for Part 9 <i>buildings</i>. [F34-OS4.2] Applies to lighting outlets for Part 9 <i>buildings</i>.</p> <p>9.34.3. [F30-OS3.1] [F10-OS3.7] Applies to emergency lighting for Part 9 <i>buildings</i>.</p>
<b>10.3.2.1.</b>	<b>General</b>
(1)	[F140-OC]
(2)	
<b>10.3.2.2.</b>	<b>Reduction in Performance Level</b>
(1)	
(2)	
(3)	
(4)	
(5)	
(6)	
(7)	
(8)	
(9)	
(10)	
(11)	
<b>10.4.1.1.</b>	<b>Substitution</b>
(1)	
(2)	

Table 11  
Objectives and Functional Statements Attributed to the Acceptable Solutions in Part 11 of Division B

Acceptable Solution	Objectives and Functional Statements
11.1.1.1.	Scope
(1)	
11.1.1.2.	Definitions
(1)	
11.1.2.1.	Extension, Material Alteration or Repair
(1)	
11.2.1.1.	Construction Index and Hazard Index
(1)	
(2)	
(3)	
11.2.1.2.	Multiple Occupancies
(1)	
11.2.1.3.	Prohibition of Occupancy Combinations
(1)	[F41-OH2.1]
	[F02, F03-OS1.2] [F10-OS1.5]
11.3.1.1.	Material Alteration or Repair of a Building System
(1)	[F140-OC]
11.3.1.2.	New Building Systems and Extension of Existing Building Systems
(1)	
r <sub>3</sub> 11.3.2.1.	Portion of Extended Buildings
(1)	
11.3.3.1.	Basic Renovation
(1)	
(2)	
r <sub>5</sub> 11.3.3.2.	Extensive Renovation
(1)	
(2)	
(3)	
(4)	[F02, F04-OP1.2, OP1.3]
(5)	[F02, F04-OS1.2, OS1.3]
(6)	
11.3.4.1.	Extension, Material Alteration or Repair
(1)	
11.3.5.1.	Existing Septic Tanks
(1)	
r <sub>3</sub> 11.3.5.2.	Vertical Separations and Existing Sewage Systems
(1)	[F110-OE]
	[F113- OH2.1,OH5]
11.4.1.1.	Performance Level
(1)	[F140-OC]
(2)	
(3)	
11.4.2.1.	Structural
(1)	
11.4.2.2.	Increase in Occupant Load
e <sub>2</sub> (1) to (3)	
11.4.2.3.	Change of Major Occupancy
e <sub>3</sub> (1) to (6)	

Acceptable Solution	Objectives and Functional Statements
11.4.2.4.	Plumbing
(1)	
11.4.2.5.	Sewage Systems
(1)	
(2)	
(3)	
(4)	
<b>r5</b> 11.4.2.6.	Extension of Buildings of Combustible Construction
(1)	
11.4.3.1.	General
(1)	
(2)	
(3)	
11.4.3.2.	Structural
(1)	[F110-OE] Applies to manure storage tanks. [F21, F22, F61, F80, F81-OH4] [F04-OP1.2] [F20-OP2.1, OP2.2, OP2.3, OP2.4, OP2.6] [F21-OP2.1, OP2.2, OP2.4, OP2.5, OP2.6] [F22-OP2.1, OP2.3, OP2.4, OP2.5] [F81-OP2.1, OP2.4] [F82-OP2.3] [F61-OP2.3, OP2.4] [F80-OP2.3, OP2.4, OP2.6] [F04-OP3.1] [F21-OP4.1, OP4.4] [F20-OP4.3] [F04-OS1.2] [F20-OS2.1, OS2.2, OS2.3, OS2.4] [F21-OS2.1, OS2.2, OS2.3, OS2.5, OS2.6] [F61-OS2.3] [F80-OS2.3] [F81-OS2.3] [F82-OS2.3] [F30-OS3.1] [F43-OS3.4] Applies to manure storage tanks.
11.4.3.3.	Increase in Occupant Load
(1)	As applied to fire alarm systems in Subsection 3.2.4.: [F12, F13, F81, F82-OP1.2] [F02, F03, F11, F12, F13, F81, F82-OS1.2] [F11, F13-OS1.4] [F10, F11, F12, F13, F81, F82-OS1.5] [F11, F12-OS3.7] Applies to voice communication systems.  As applied to smoke control measures, and at least one elevator to permit transport of fire fighters to all floors in hotels whose floor level is more than 18 m high measured between <i>grade</i> and floor level of the top <i>storey</i> in Subsection 3.2.6.: [F02, F03, F06, F12, F13, F82-OP1.2] [F03-OP3.1] [F02, F03, F06, F12, F13, F82-OS1.2] [F02, F03, F05, F06, F10, F12-OS1.5] [F30-OS3.1]  As applied to lighting of <i>exits</i> , lighting of access to <i>exits</i> and emergency lighting in Subsection 3.2.7.: [F40-OH2.4] [F12-OH5] Applies to the requirement for a suitably identified shut-off valve outside the <i>building</i> . [F01-OP1.1] [F01, F02, F03, F06, F12, F81-OP1.2] [F02-OP3.1] [F12-OS1.1] Applies to the requirement for a suitably identified shut-off valve outside the <i>building</i> . [F02, F03, F06, F10, F11, F12, F81-OS1.2] [F02, F03, F06, F10, F11, F12, F81-OS1.5] [F02, F06, F30, F81-OS3.1] [F36-OS3.6] [F10, F11, F12, F81-OS3.7]

Acceptable Solution	Objectives and Functional Statements
(1) (Cont'd)	<p>As applied to access to <i>exit</i> widths based on <i>occupant load</i> in Article 3.3.1.16.: [F10-OS3.7]</p> <p>As applied to door release hardware in Article 3.3.1.12.: [F73-OA1] [F30-OS3.1] [F10, F12-OS3.7]</p> <p>As applied to travel distance in Article 3.4.2.4.: [F10-OS3.7]</p> <p>As applied to number of <i>exits</i> in Articles 3.4.2.3. and 3.4.2.5.: [F05, F10-OS1.5] [F10-OS3.7]</p> <p>As applied to exit widths based on <i>occupant load</i> in Article 3.4.3.2.: [F12-OP1.2] [F12-OS1.2] [F30-OS3.1] [F10, F12-OS3.7]</p> <p>As applied to <i>exit</i> signs in Articles 3.4.5.1. and 3.4.5.2.: [F10, F81-OS3.7]</p> <p>As applied to door release hardware in Article 3.4.6.15.: [F73-OA1] [F02-OS1.2] [F10, F81-OS1.5] [F10, F81-OS3.7]</p> <p>As applied to access to <i>exit</i> widths based on <i>occupant load</i> in Subsection 9.9.3.: [F30-OS3.1] [F10-OS3.7]</p> <p>As applied to <i>exit</i> widths based on <i>occupant load</i> in Subsection 9.9.3.: [F30-OS3.1] [F10-OS3.7]</p> <p>As applied to travel distance in Article 9.9.9.1.: [F10-OS3.7]</p> <p>As applied to number of <i>exits</i> in Articles 9.9.8.2. and 9.9.9.2.: [F10-OS3.7]</p> <p>As applied to <i>exit</i> signs in Subsection 9.9.10.: [F73-OA1] [F10-OS1.5] [F10-OS3.7]</p> <p>As applied to lighting of <i>exits</i>, lighting of <i>access to exits</i> and emergency lighting in Article 9.9.11.: [F30-OS3.1] [F10-OS3.7]</p> <p>As applied to fire alarm systems in Subsection 9.10.18.: [F02-OS1.2] Applies to a <i>sprinklered building</i>. [F03, F11-OS1.2] [F11-OS1.5]</p> <p>As applied to smoke alarms in Subsection 9.10.19.: [F11, F81-OS1.4] [F11, F81, F82-OS1.5]</p>
(2)	
(3)	<p>As applied to required ventilation for <i>buildings</i> in Sentence 6.2.2.1.(2): [F50-OH1.1]</p> <p>As applied to plumbing facilities for <i>buildings</i> in Subsection 3.7.4.: [F74-OA2] [F50-OH1.1] [F72-OH2.1] [F70-OH2.2] [F71-OH2.3] [F40-OH2.4] [F101-OH6] [F20, F30-OS3.1]</p> <p>As applied to plumbing facilities serving Part 9 <i>dwelling units</i> in Article 9.31.1.1.: [F44, F62-OH1.1] [F40, F41, F62-OH1.2, OH1.3] [F70, F71, F72, F80-OH2.1] [F41-OH2.2] [F70, F71, F72, F80, F81-OH2.3] [F01-OS1.1] [F31, F80-OS2.3] [F20-OS3.1] [F23-OS3.4]</p>

Acceptable Solution	Objectives and Functional Statements
(1) (Cont'd)	[F32-OS3.3] [F40, F80-OS3.4] [F43-OS3.4] Applies to equipment. [F44-OS3.4] [F81-OS3.4] [F36-OS3.6] [F40-OR1] [F130-OR1]
11.4.3.6.	Sewage Systems
(1)	[F81, F110, F111-OE] [F81, F111-OE] [F82-OE] [F82, F110-OE] [F82, F111-OE] [F104, F110, F111-OE] [F110-OE] [F110, F111-OE] [F110, F111, F112-OE] [F110, F112-OE] [F111-OE] [F111, F112-OE] [F111, F113-OE] [F112-OE] [F50-OH1.1] [F82-OH2.1] [F82, F111-OH2.1] [F104, F110, F111-OH2.1] [F110-OH2.1] [F110, F111-OH2.1] [F110, F111, F112 -OH2.1] [F110, F112-OH2.1] [F111-OH2.1] [F111, F112-OH2.1] [F40-OH2.4] [F42-OH2.5] [F113-OH2.6] [F81, F110, F111-OH5] [F81, F111-OH5] [F82-OH5] [F82, F110-OH5] [F82, F111-OH5] [F104, F110, F111-OH5] [F110-OH5] [F110, F111-OH5] [F110, F111, F112-OH5] [F110, F112-OH5] [F111-OH5] [F111, F112-OH5] [F111, F113-OH5] [F112-OH5] [F101-OH6] [F20-OP2.3] [F81-OP2.6] [F104, F110, F111-OR2] [F20-OS2.1] [F20-OS2.2] [F30-OS3.1]

Acceptable Solution	Objectives and Functional Statements
11.4.3.7.	Extension of Buildings of Combustible Construction
(1)	
11.5.1.1.	Compliance Alternatives
(1)	
(2)	

# **MMAH Supplementary Standard SB-1**

## **Climatic and Seismic Data**

**September 2, 2014 update**

**COMMENCEMENT**

MMAH Supplementary Standard SB-1 comes into force on the 1st day of January, 2014.

r<sub>5</sub> SB-1 as amended by Ontario Regulation 191/14 comes into force on the 1st day of January, 2015.

**EDITORIAL**

e<sub>2</sub> Editorial correction issued for January 1st, 2014.

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# SB-1 Climatic and Seismic Data

## Introduction

The great diversity of climate in Ontario has a considerable effect on the performance of buildings; consequently, building design must reflect this diversity. This Supplementary Standard briefly describes how climatic design values are computed and provides recommended design data for a number of cities, towns, and lesser populated locations. Through the use of such data, appropriate allowances can be made for climate variations in different localities of Ontario and the 2012 Building Code can be applied provincially.

The climatic design data provided in this Supplementary Standard are based on weather observations collected by the Atmospheric Environment Service, Environment Canada. The climatic design data have been researched and analyzed for the Canadian Commission on Building and Fire Codes by Environment Canada, and appear at the end of this Supplementary Standard in Table 1.2, Design Data for Selected Locations in Ontario.

As it is not practical to list values for all municipalities in Ontario, recommended climatic design values for locations not listed can be obtained by contacting the Atmospheric Environment Service, Environment Canada, 4905 Dufferin Street, Downsview, Ontario M3H 5T4, (416) 739-4365. It should be noted, however, that these recommended values may differ from the values accepted by municipal building authorities based on local experience.

The information on seismic hazard in spectral format has been provided by the Geological Survey of Canada of Natural Resources Canada. Information for municipalities not listed may be obtained through the Natural Resources Canada Web site at [www.EarthquakesCanada.ca](http://www.EarthquakesCanada.ca), or by writing to the Geological Survey of Canada at 7 Observatory Crescent, Ottawa, Ontario K1A 0Y3, or at P.O. Box 6000, Sidney, B.C. V8L 4B2.

## General

The choice of climatic elements tabulated in this Supplementary Standard and the form in which they are expressed have been dictated largely by the requirements for specific values in several sections of the 2012 Building Code. These elements include the Ground Snow Loads, Wind Pressures, Design Temperatures, Heating Degree-Days, One-Day and 15-Minute Rainfalls, the Annual Total Precipitation values and Seismic Data. The following notes briefly explain the significance of these particular elements in building design, and indicate which weather observations were used and how they were analyzed to yield the required design values.

In Table 1.2, Design Data for Selected Locations in Ontario, design weather recommendations are listed for over 230 locations, which have been chosen based on a variety of reasons. Many incorporated cities and towns with significant populations are included unless located close to larger cities. For sparsely populated areas, many smaller towns and villages are listed. Other locations have been added to the list when the demand for climatic design recommendations at these sites has been significant. The named locations refer to the specific latitude and longitude defined by the Gazetteer of Canada (Natural Resources Canada), available from Publishing and Depository Services Canada, Public Works and Government Services Canada, Ottawa, Ontario K1A 0S5.

- r5** Almost all of the weather observations used in preparing Table 1.2 were, of necessity, observed at inhabited locations. To estimate design values for arbitrary locations, the observed or computed values for the weather stations were mapped and interpolated appropriately. Where possible, adjustments have been applied for the influence of elevation and known topographical effects. Such influences include the tendency of cold air to collect in depressions, for precipitation to increase with elevation, and for generally stronger winds near large bodies of water. Elevations have been added to the Table because of their potential to significantly influence climatic design values.

Since interpolation from the values in Table 1.2 to other locations may not be valid due to local and other effects, Environment Canada will provide climatic design element recommendations for locations not listed in Table 1.2. Local effects are particularly significant in mountainous areas, where the values apply only to populated valleys and not to the mountain slopes and high passes, where very different conditions are known to exist.

## Changing and Variable Climates

Climate is not static. At any location, weather and climatic conditions vary from season to season, year to year, and over longer time periods (climate cycles). This has always been the case. Evidence is mounting that the climates of Ontario are changing and will continue to change significantly in the future. When estimating climatic design loads, this variability can be considered using appropriate statistical analysis, data records spanning sufficient periods, and meteorological judgement. The analysis generally assumes that the past climate will be representative of the future climate.

Past and ongoing modifications to atmospheric chemistry (from greenhouse gas emissions and land use changes) are expected to alter most climatic regimes in the future despite the success of the most ambitious greenhouse gas mitigation plans.<sup>(10)</sup> Some regions could see an increase in the frequency and intensity of many weather extremes, which will accelerate weathering processes. Consequently, many buildings will need to be designed, maintained and operated to adequately withstand ever changing climatic loads.

Similar to global trends, the last decade in Canada was noted as the warmest in instrumented record. Canada has warmed, on average, at almost twice the rate of the global average increase, while the western Arctic is warming at a rate that is unprecedented over the past 400 years.<sup>(10)</sup> Mounting evidence from Arctic communities indicates that rapid changes to climate in the North have resulted in melting permafrost and impacts from other climate changes have affected nearly every type of built structure. Furthermore, analyses of Canadian precipitation data shows that many regions of the country have, on average, also been tending towards wetter conditions.<sup>(10)</sup> In the United States, where the density of climate monitoring stations is greater, a number of studies have found an unambiguous upward trend in the frequency of heavy to extreme precipitation events, with these increases coincident with a general upward trend in the total amount of precipitation. Climate change model results, based on an ensemble of global climate models worldwide, project that future climate warming rates will be greatest in higher latitude countries such as Canada.<sup>(11)</sup>

## January Design Temperatures

A building and its heating system should be designed to maintain the inside temperature at some pre-determined level. To achieve this, it is necessary to know the most severe weather conditions under which the system will be expected to function satisfactorily. Failure to maintain the inside temperature at the pre-determined level will not usually be serious if the temperature drop is not great and if the duration is not long. The outside conditions used for design should, therefore, not be the most severe in many years, but should be the somewhat less severe conditions that are occasionally but not greatly exceeded.

The January design temperatures are based on an analysis of January air temperatures only. Wind and solar radiation also affect the inside temperature of most buildings and may need to be considered for energy-efficient design.

The January design temperature is defined as the lowest temperature at or below which only a certain small percentage of the hourly outside air temperatures in January occur. In the past, stations with records from all or part of the period

1951-66 formed the basis for calculation of the 2.5 and 1% January temperatures. Where necessary, the data were adjusted for consistency. Since most of the temperatures were observed at airports, design values for the core areas of large cities could be 1 or 2°C milder, although the values for the fringe areas are probably about the same as for the airports. No adjustments were made for this urban heat island effect. The design values for the next 20 to 30 years will probably differ from these tabulated values due to year-to-year climate variability and global climate change resulting from the impact of human on atmospheric chemistry.

The design temperatures were reviewed and updated using hourly temperature observations from stations for a 25-year period up to 2006 with at least 8 years of complete data. These data are consistent with data shown for Canadian locations in the 2009 Handbook of Fundamentals<sup>(12)</sup> published by the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE). The most recent 25 years of record were used to provide a balance between accounting for trends in the climate and the sampling variation owing to year-to-year variation. The 1% and 2.5% values used for the design conditions represent percentiles of the cumulative frequency distribution of hourly temperatures and correspond to January temperatures that are colder for 8 and 19 hours, respectively, on average over the long term.

Table 1.2  
Design Data for Selected Locations in Ontario

Location	Elevation, m	Design Temperature				Degree Days Below 18°C	15 Min Rainfall, mm	One Day Rainfall, 1/50, mm	Annual Rainfall, mm	Annual Total Precipitation, mm	Driving Rain Wind Pressures, Pa, 1/5	Snow Load, kPa, 1/50		Hourly Wind Pressures, kPa		Seismic Data				
		January		July 2.5%								S <sub>s</sub>	S <sub>i</sub>	1/10	1/50	S <sub>a</sub> (0.2)	S <sub>a</sub> (0.5)	S <sub>a</sub> (1.0)	S <sub>a</sub> (2.0)	PGA
		2.5%, °C	1%, °C	Dry, °C	Wet, °C															
Ailsa Craig	230	-17	-19	30	23	3840	25	103	800	180	2.2	0.4	0.39	0.50	0.130	0.082	0.052	0.016	0.045	
Ajax	95	-20	-22	30	23	3820	23	92	760	160	1.0	0.4	0.37	0.48	0.180	0.120	0.070	0.022	0.074	
Alexandria	80	-24	-26	30	23	4600	25	103	800	160	2.4	0.4	0.31	0.40	0.640	0.310	0.140	0.047	0.320	
Alliston	220	-23	-25	29	23	4200	28	113	690	120	2.0	0.4	0.28	0.36	0.150	0.099	0.062	0.020	0.046	
Almonte	120	-26	-28	30	23	4620	25	97	730	140	2.5	0.4	0.32	0.41	0.550	0.270	0.130	0.042	0.280	
Armstrong	340	-37	-40	28	21	6500	23	97	525	100	2.7	0.4	0.23	0.30	0.095	0.057	0.026	0.008	0.036	
Arnprior	85	-27	-29	30	23	4680	23	86	630	140	2.5	0.4	0.29	0.37	0.610	0.290	0.130	0.044	0.310	
Atikokan	400	-33	-35	29	22	5750	25	103	570	100	2.4	0.3	0.23	0.30	0.095	0.057	0.026	0.008	0.036	
Attawapiskat	10	-37	-39	28	21	7100	18	81	450	160	2.8	0.3	0.32	0.41	0.110	0.057	0.026	0.008	0.053	
Aurora	270	-21	-23	30	23	4210	28	108	700	140	2.0	0.4	0.34	0.44	0.160	0.110	0.065	0.021	0.053	
Bancroft	365	-28	-31	29	23	4740	25	92	720	100	3.1	0.4	0.25	0.32	0.260	0.170	0.089	0.030	0.089	
Barrie	245	-24	-26	29	23	4380	28	97	700	120	2.5	0.4	0.28	0.36	0.150	0.110	0.065	0.021	0.044	
Barrie/field	100	-22	-24	28	23	3390	23	108	780	160	2.1	0.4	0.36	0.47	0.300	0.180	0.099	0.031	0.120	
Beaverton	240	-24	-26	30	23	4300	25	108	720	120	2.2	0.4	0.28	0.36	0.160	0.120	0.070	0.023	0.047	
Belleville	90	-22	-24	29	23	3910	23	97	760	180	1.7	0.4	0.33	0.43	0.250	0.160	0.088	0.028	0.100	
Belmont	260	-17	-19	30	24	3840	25	97	850	180	1.7	0.4	0.36	0.47	0.160	0.097	0.056	0.017	0.086	
Big Trout Lake (Kitchenuhmaykoosib)	215	-38	-40	26	20	7450	18	92	400	150	3.2	0.2	0.33	0.42	0.095	0.057	0.026	0.008	0.036	
CFB Borden	225	-23	-25	29	23	4300	28	103	690	120	2.2	0.4	0.28	0.36	0.140	0.100	0.063	0.020	0.045	
Bracebridge	310	-26	-28	29	23	4800	25	103	830	120	3.1	0.4	0.27	0.35	0.180	0.120	0.072	0.024	0.056	
Bradford	240	-23	-25	30	23	4280	28	108	680	120	2.1	0.4	0.28	0.36	0.150	0.100	0.065	0.021	0.049	
Brampton	215	-19	-21	30	23	4100	28	119	720	140	1.3	0.4	0.34	0.44	0.210	0.120	0.063	0.020	0.110	
Branford	205	-18	-20	30	23	3900	23	103	780	160	1.3	0.4	0.33	0.42	0.190	0.110	0.061	0.019	0.089	
Brighton	95	-21	-23	29	23	4000	23	94	760	160	1.6	0.4	0.37	0.48	0.240	0.150	0.083	0.027	0.099	
Brockville	85	-23	-25	29	23	4060	25	103	770	180	2.2	0.4	0.34	0.44	0.350	0.220	0.120	0.036	0.150	
Burk's Falls	305	-26	-28	29	22	5020	25	97	810	120	2.7	0.4	0.27	0.35	0.210	0.140	0.075	0.026	0.074	
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

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Table 1.2 (Cont'd)  
Design Data for Selected Locations in Ontario

Location	Elevation, m	Design Temperature				Degree Days Below 18°C	15 Min Rainfall, mm	One Day Rainfall, 1/50, mm	Annual Rainfall, mm	Annual Total Precipitation, mm	Driving Rain Wind Pressures, Pa, 1/5	Snow Load, kPa, 1/50		Hourly Wind Pressures, kPa		Seismic Data				
		January		July 2.5%								S <sub>s</sub>	S <sub>i</sub>	1/10	1/50	S <sub>a</sub> (0.2)	S <sub>a</sub> (0.5)	S <sub>a</sub> (1.0)	S <sub>a</sub> (2.0)	PGA
		2.5%, °C	1%, °C	Dry, °C	Wet, °C															
Burlington	80	-17	-19	31	23	3740	23	103	770	850	160	0.9	0.4	0.36	0.46	0.320	0.170	0.064	0.022	0.180
Cambridge	295	-18	-20	29	23	4100	25	113	800	890	160	1.6	0.4	0.28	0.36	0.180	0.100	0.060	0.019	0.073
Campbellford	150	-23	-26	30	23	4280	25	97	730	850	160	1.7	0.4	0.32	0.41	0.230	0.150	0.085	0.027	0.084
Cannington	255	-24	-26	30	23	4310	25	108	740	950	120	2.2	0.4	0.28	0.36	0.170	0.120	0.070	0.023	0.048
Carleton Place	135	-25	-27	30	23	4600	25	97	730	850	160	2.5	0.4	0.32	0.41	0.490	0.250	0.120	0.039	0.230
Cavan	200	-23	-25	30	23	4400	25	97	740	850	140	2.0	0.4	0.34	0.44	0.190	0.130	0.076	0.024	0.061
Centralia	260	-17	-19	30	23	3800	25	103	820	1000	180	2.3	0.4	0.38	0.49	0.130	0.080	0.052	0.016	0.041
Chapleau	425	-35	-38	27	21	5900	20	97	530	850	80	4.0	0.4	0.23	0.30	0.095	0.057	0.037	0.013	0.036
Chatham	180	-16	-18	31	24	3470	28	103	800	850	180	1.0	0.4	0.33	0.43	0.160	0.092	0.050	0.015	0.088
Chesley	275	-19	-21	29	22	4320	28	103	810	1125	140	2.8	0.4	0.37	0.48	0.120	0.082	0.053	0.018	0.037
Clinton	280	-17	-19	29	23	4150	25	103	810	1000	160	2.6	0.4	0.38	0.49	0.120	0.078	0.050	0.016	0.038
Coboconk	270	-25	-27	30	23	4500	25	108	740	950	120	2.5	0.4	0.27	0.35	0.180	0.130	0.074	0.025	0.055
Cobourg	90	-21	-23	29	23	3980	23	94	760	825	160	1.2	0.4	0.38	0.49	0.220	0.140	0.079	0.025	0.096
Cochrane	245	-34	-36	29	21	6200	20	92	575	875	80	2.8	0.3	0.27	0.35	0.180	0.098	0.054	0.018	0.094
Colborne	105	-21	-23	29	23	3980	23	94	760	850	160	1.6	0.4	0.38	0.49	0.230	0.140	0.081	0.026	0.098
Collingwood	190	-21	-23	29	23	4180	28	97	720	950	160	2.7	0.4	0.30	0.39	0.130	0.097	0.060	0.020	0.040
Cornwall	35	-23	-25	30	23	4250	25	103	780	960	180	2.2	0.4	0.32	0.41	0.620	0.310	0.140	0.046	0.310
Corunna	185	-16	-18	31	24	3600	25	100	760	800	180	1.0	0.4	0.36	0.47	0.120	0.074	0.047	0.015	0.040
Deep River	145	-29	-32	30	22	4900	23	92	650	850	100	2.5	0.4	0.27	0.35	0.630	0.300	0.130	0.043	0.320
Deseronto	85	-22	-24	29	23	4070	23	92	760	900	160	1.9	0.4	0.33	0.43	0.270	0.170	0.092	0.029	0.110
Dorchester	260	-18	-20	30	24	3900	28	103	850	950	180	1.9	0.4	0.36	0.47	0.160	0.096	0.056	0.017	0.081
Dorion	200	-33	-35	28	21	5950	20	103	550	725	160	2.8	0.4	0.30	0.39	0.095	0.057	0.026	0.008	0.036
Dresden	185	-16	-18	31	24	3750	28	97	760	820	180	1.0	0.4	0.33	0.43	0.150	0.088	0.050	0.015	0.078
Dryden	370	-34	-36	28	22	5850	25	97	550	700	120	2.4	0.3	0.23	0.30	0.095	0.057	0.026	0.008	0.036
Dundalk	525	-22	-24	29	22	4700	28	108	750	1080	150	3.4	0.4	0.33	0.42	0.130	0.091	0.058	0.019	0.043
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

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Table 1.2 (Cont'd)  
Design Data for Selected Locations in Ontario

Location	Elevation, m	Design Temperature				Degree Days Below 18°C	15 Min Rainfall, mm	One Day Rainfall, 1/50, mm	Annual Rainfall, mm	Annual Total Precipitation, mm	Driving Rain Wind Pressures, Pa, 1/5	Snow Load, kPa, 1/50		Hourly Wind Pressures, kPa		Seismic Data				
		January		July 2.5%								S <sub>s</sub>	S <sub>i</sub>	1/10	1/50	S <sub>a</sub> (0.2)	S <sub>a</sub> (0.5)	S <sub>a</sub> (1.0)	S <sub>a</sub> (2.0)	PGA
		2.5%, °C	1%, °C	Dry, °C	Wet, °C															
Dunnville	175	-15	-17	30	24	3660	23	108	830	950	160	2.0	0.4	0.36	0.46	0.310	0.160	0.063	0.021	0.170
Durham	340	-20	-22	29	22	4340	28	103	815	1025	140	2.8	0.4	0.34	0.44	0.120	0.085	0.055	0.018	0.040
Dutton	225	-16	-18	31	24	3700	28	92	850	925	180	1.3	0.4	0.36	0.47	0.160	0.096	0.054	0.017	0.087
Earlton	245	-33	-36	29	22	5730	23	92	560	820	120	2.6	0.4	0.35	0.45	0.240	0.140	0.075	0.024	0.110
Edison	365	-34	-36	28	22	5740	25	108	510	680	120	2.4	0.3	0.24	0.31	0.095	0.057	0.026	0.008	0.036
Elliot Lake	380	-26	-28	29	21	4950	23	108	630	950	160	2.9	0.4	0.29	0.38	0.095	0.065	0.043	0.015	0.036
Elmvale	220	-24	-26	29	23	4200	28	97	720	950	140	2.6	0.4	0.28	0.36	0.140	0.100	0.064	0.021	0.040
Embro	310	-19	-21	30	23	3950	28	113	830	950	160	2.0	0.4	0.37	0.48	0.150	0.094	0.056	0.018	0.072
Englehart	205	-33	-36	29	22	5800	23	92	600	880	100	2.5	0.4	0.32	0.41	0.230	0.130	0.074	0.024	0.110
Espanola	220	-25	-27	29	21	4920	23	108	650	840	160	2.3	0.4	0.33	0.42	0.100	0.080	0.050	0.018	0.036
Exeter	265	-17	-19	30	23	3900	25	113	810	975	180	2.4	0.4	0.38	0.49	0.130	0.080	0.051	0.016	0.040
Fenelon Falls	260	-25	-27	30	23	4440	25	108	730	950	120	2.3	0.4	0.28	0.36	0.180	0.130	0.074	0.024	0.054
Fergus	400	-20	-22	29	23	4300	28	108	760	925	160	2.2	0.4	0.28	0.36	0.160	0.095	0.058	0.019	0.052
Forest	215	-16	-18	31	23	3740	25	103	810	875	160	2.0	0.4	0.37	0.48	0.120	0.076	0.049	0.015	0.038
Fort Erie	180	-15	-17	30	24	3650	23	108	860	1020	160	2.6	0.4	0.36	0.46	0.330	0.180	0.067	0.022	0.200
Fort Erie (Ridgeway)	190	-15	-17	30	24	3600	25	108	860	1000	160	2.5	0.4	0.36	0.46	0.330	0.180	0.066	0.022	0.190
Fort Frances	340	-33	-35	29	22	5440	25	108	570	725	120	2.3	0.3	0.24	0.31	0.095	0.057	0.026	0.008	0.036
Gananoque	80	-22	-24	28	23	4010	23	103	760	900	180	2.1	0.4	0.36	0.47	0.300	0.190	0.100	0.032	0.120
Geraldton	345	-36	-39	28	21	6450	20	86	550	725	100	2.9	0.4	0.23	0.30	0.095	0.057	0.026	0.008	0.036
Glencoe	215	-16	-18	31	24	3680	28	103	800	925	180	1.5	0.4	0.33	0.43	0.160	0.092	0.053	0.016	0.080
Goderich	185	-16	-18	29	23	4000	25	92	810	950	180	2.4	0.4	0.43	0.55	0.110	0.075	0.049	0.016	0.036
Gore Bay	205	-24	-26	28	22	4700	23	92	640	860	160	2.6	0.4	0.34	0.44	0.095	0.067	0.044	0.015	0.036
Graham	495	-35	-37	29	22	5940	23	97	570	750	140	2.6	0.3	0.23	0.30	0.095	0.057	0.026	0.008	0.036
Gravenhurst (Muskoka Airport)	255	-26	-28	29	23	4760	25	103	790	1050	120	2.7	0.4	0.28	0.36	0.170	0.120	0.070	0.024	0.052
Grimsby	85	-16	-18	30	23	3520	23	108	760	875	160	0.9	0.4	0.36	0.46	0.340	0.180	0.068	0.022	0.200
Guelph	340	-19	-21	29	23	4270	28	103	770	875	140	1.9	0.4	0.28	0.36	0.170	0.100	0.059	0.019	0.067
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

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Table 1.2 (Cont'd)  
Design Data for Selected Locations in Ontario

Location	Elevation, m	Design Temperature				Degree Days Below 18°C	15 Min Rainfall, mm	One Day Rainfall, 1/50, mm	Annual Rainfall, mm	Annual Total Precipitation, mm	Driving Rain Wind Pressures, Pa, 1/5	Snow Load, kPa, 1/50		Hourly Wind Pressures, kPa		Seismic Data				
		January		July 2.5%								S <sub>s</sub>	S <sub>r</sub>	1/10	1/50	S <sub>a</sub> (0.2)	S <sub>a</sub> (0.5)	S <sub>a</sub> (1.0)	S <sub>a</sub> (2.0)	PGA
		2.5%, °C	1%, °C	Dry, °C	Wet, °C															
Guthrie	280	-24	-26	29	23	4300	28	103	700	950	120	2.5	0.4	0.28	0.36	0.150	0.110	0.066	0.022	0.043
Haileybury	210	-32	-35	30	22	5600	23	92	590	820	120	2.4	0.4	0.34	0.44	0.250	0.150	0.079	0.026	0.120
Haldimand (Caledonia)	190	-18	-20	30	23	3750	23	108	810	875	160	1.2	0.4	0.34	0.44	0.310	0.160	0.063	0.022	0.170
Haldimand (Hagersville)	215	-17	-19	30	23	3760	25	97	840	875	160	1.3	0.4	0.36	0.46	0.250	0.140	0.062	0.019	0.140
Haliburton	335	-27	-29	29	23	4840	25	92	780	980	100	2.9	0.4	0.27	0.35	0.220	0.150	0.081	0.027	0.074
Haltim Hills (Georgetown)	255	-19	-21	30	23	4200	28	119	750	850	140	1.4	0.4	0.29	0.37	0.200	0.120	0.062	0.020	0.110
Hamilton																				
Above Escarpment - West of John C. Munro Int'l Airport	240	-17	-19	31	23	3460	23	108	810	875	160	1.5	0.4	0.36	0.46	0.320	0.170	0.064	0.022	0.180
Above Escarpment - East of John C. Munro Int'l Airport	200	-17	-19	31	23	3460	23	108	810	875	160	1.3	0.4	0.36	0.46	0.320	0.170	0.064	0.022	0.180
Below Escarpment - West of Highway 403	90	-17	-19	31	23	3460	23	108	810	875	160	1.1	0.4	0.36	0.46	0.320	0.170	0.064	0.022	0.180
Below Escarpment - East of Highway 403	90	-17	-19	31	23	3460	23	108	810	875	160	1.1	0.4	0.36	0.46	0.320	0.170	0.064	0.022	0.180
Hanover	270	-19	-21	29	22	4300	28	103	790	1050	140	2.6	0.4	0.37	0.48	0.120	0.082	0.053	0.018	0.039
Hastings	200	-24	-26	30	23	4280	25	92	730	840	140	2.0	0.4	0.32	0.41	0.220	0.140	0.083	0.027	0.074
Hawkesbury	50	-25	-27	30	23	4610	23	103	800	925	160	2.3	0.4	0.32	0.41	0.570	0.290	0.130	0.044	0.300
Hearst	245	-35	-37	29	21	6450	20	86	520	825	80	2.8	0.3	0.23	0.30	0.095	0.057	0.033	0.012	0.036
Honey Harbour	180	-24	-26	29	23	4300	25	97	710	1050	160	2.7	0.4	0.30	0.39	0.150	0.110	0.065	0.022	0.044
Hornepayne	360	-37	-40	28	21	6340	20	93	420	750	80	3.6	0.4	0.23	0.30	0.095	0.057	0.027	0.010	0.036
Huntsville	335	-26	-29	29	22	4850	25	103	800	1000	120	2.9	0.4	0.27	0.35	0.200	0.140	0.075	0.026	0.068
Ingersoll	280	-18	-20	30	23	3920	28	108	840	950	180	1.7	0.4	0.37	0.48	0.160	0.097	0.057	0.018	0.082
Iroquois Falls	275	-33	-36	29	21	6100	20	86	575	825	100	2.9	0.3	0.29	0.37	0.190	0.100	0.059	0.020	0.096
Jellicoe	330	-36	-39	28	21	6400	20	86	550	750	100	2.7	0.4	0.23	0.30	0.095	0.057	0.026	0.008	0.036
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

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Table 1.2 (Cont'd)  
Design Data for Selected Locations in Ontario

Location	Elevation, m	Design Temperature				Degree Days Below 18°C	15 Min Rainfall, mm	One Day Rainfall, 1/50, mm	Annual Rainfall, mm	Annual Total Precipitation, mm	Driving Rain Wind Pressures, Pa, 1/5	Snow Load, kPa, 1/50		Hourly Wind Pressures, kPa		Seismic Data					
		January		July 2.5%								S <sub>s</sub>	S <sub>i</sub>	1/10	1/50	S <sub>s</sub> (0.5)	S <sub>s</sub> (1.0)	S <sub>s</sub> (2.0)	S <sub>s</sub> (1.0)	S <sub>s</sub> (2.0)	PGA
		2.5%, °C	1%, °C	Dry, °C	Wet, °C																
Kapuskasing	245	-34	-36	29	21	6250	20	86	550	825	100	2.8	0.3	0.24	0.31	0.110	0.068	0.042	0.014	0.045	
Kemptville	90	-25	-27	30	23	4540	25	92	750	925	160	2.3	0.4	0.32	0.41	0.560	0.280	0.130	0.042	0.280	
Kenora	370	-33	-35	28	22	5630	25	113	515	630	120	2.3	0.3	0.24	0.31	0.095	0.057	0.026	0.008	0.036	
Killaloe	185	-28	-31	30	22	4960	23	86	680	825	120	2.7	0.4	0.27	0.35	0.440	0.230	0.110	0.036	0.210	
Kincardine	190	-17	-19	28	22	3890	25	92	800	950	180	2.6	0.4	0.43	0.55	0.110	0.075	0.049	0.016	0.036	
Kingston	80	-22	-24	28	23	4000	23	108	780	950	180	2.1	0.4	0.36	0.47	0.290	0.180	0.099	0.031	0.120	
Kinmount	295	-26	-28	29	23	4600	25	108	750	950	120	2.7	0.4	0.27	0.35	0.200	0.140	0.077	0.026	0.062	
Kirkland Lake	325	-33	-36	29	22	6000	23	92	600	875	100	2.9	0.3	0.30	0.39	0.220	0.120	0.069	0.022	0.100	
Kitchener	335	-19	-21	29	23	4200	28	119	780	925	140	2.0	0.4	0.29	0.37	0.160	0.095	0.058	0.018	0.054	
Lakefield	240	-24	-26	30	23	4330	25	92	720	850	140	2.2	0.4	0.29	0.38	0.200	0.140	0.079	0.026	0.062	
Lansdowne House	240	-38	-40	28	21	7150	23	92	500	680	140	2.9	0.2	0.25	0.32	0.095	0.057	0.026	0.008	0.036	
Leamington	190	-15	-17	31	24	3400	28	113	800	875	180	0.8	0.4	0.36	0.47	0.170	0.092	0.047	0.015	0.091	
Lindsay	265	-24	-26	30	23	4320	25	103	720	850	140	2.3	0.4	0.29	0.38	0.180	0.120	0.074	0.024	0.053	
Lion's Head	185	-19	-21	27	22	4300	25	103	700	950	180	2.7	0.4	0.37	0.48	0.110	0.082	0.053	0.018	0.036	
Listowel	380	-19	-21	29	23	4300	28	119	800	1000	160	2.6	0.4	0.36	0.47	0.130	0.085	0.054	0.018	0.043	
London	245	-18	-20	30	24	3900	28	103	825	975	180	1.9	0.4	0.36	0.47	0.150	0.093	0.055	0.017	0.076	
Lucan	300	-17	-19	30	23	3900	25	113	810	1000	180	2.3	0.4	0.39	0.50	0.130	0.083	0.052	0.017	0.046	
Maitland	85	-23	-25	29	23	4080	25	103	770	975	180	2.2	0.4	0.34	0.44	0.370	0.220	0.120	0.036	0.150	
Markdale	425	-20	-22	29	22	4500	28	103	820	1050	160	3.4	0.4	0.32	0.41	0.120	0.088	0.056	0.019	0.040	
Markham	175	-21	-23	31	24	4000	25	86	720	825	140	1.3	0.4	0.34	0.44	0.180	0.110	0.067	0.022	0.061	
Martin	485	-35	-37	29	22	5900	25	103	560	750	120	2.6	0.3	0.23	0.30	0.095	0.057	0.026	0.008	0.036	
Matheson	265	-33	-36	29	21	6080	20	86	580	825	100	2.8	0.3	0.30	0.39	0.200	0.110	0.063	0.020	0.098	
Mattawa	165	-29	-31	30	22	5050	23	86	700	875	100	2.1	0.4	0.25	0.32	0.460	0.230	0.100	0.035	0.240	
Midland	190	-24	-26	29	23	4200	25	97	740	1060	160	2.7	0.4	0.30	0.39	0.150	0.110	0.064	0.022	0.042	
Milton	200	-18	-20	30	23	3920	25	125	750	850	160	1.3	0.4	0.33	0.43	0.260	0.140	0.063	0.020	0.140	
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

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Table 1.2 (Cont'd)  
Design Data for Selected Locations in Ontario

Location	Elevation, m	Design Temperature				Degree Days Below 18°C	15 Min Rainfall, mm	One Day Rainfall, 1/50, mm	Annual Rainfall, mm	Annual Total Precipitation, mm	Driving Rain Wind Pressures, Pa, 1/5	Snow Load, kPa, 1/50		Hourly Wind Pressures, kPa		Seismic Data				
		January		July 2.5%								S <sub>s</sub>	S <sub>r</sub>	1/10	1/50	S <sub>a</sub> (0.2)	S <sub>a</sub> (0.5)	S <sub>a</sub> (1.0)	S <sub>a</sub> (2.0)	PGA
		2.5%, °C	1%, °C	Dry, °C	Wet, °C															
Milverton	370	-19	-21	29	23	4200	28	108	800	1050	160	2.4	0.4	0.33	0.43	0.140	0.086	0.054	0.018	0.044
Minden	270	-27	-29	29	23	4640	25	97	760	1010	100	2.7	0.4	0.27	0.35	0.200	0.140	0.078	0.026	0.065
Mississauga	160	-18	-20	30	23	3880	25	113	720	800	160	1.1	0.4	0.34	0.44	0.260	0.150	0.065	0.020	0.140
Mississauga (Lester B. Pearson International Airport)	170	-20	-22	31	24	3890	26	108	685	790	160	1.1	0.4	0.34	0.44	0.210	0.120	0.065	0.021	0.120
Mississauga (Port Credit)	75	-18	-20	29	23	3780	25	108	720	800	160	0.9	0.4	0.37	0.48	0.280	0.150	0.065	0.021	0.150
Mitchell	335	-18	-20	29	23	4100	28	113	810	1050	160	2.4	0.4	0.37	0.48	0.130	0.083	0.053	0.017	0.042
Moosonee	10	-36	-38	28	22	6800	18	81	500	700	160	2.2	0.3	0.27	0.35	0.130	0.068	0.040	0.014	0.057
Morrisburg	75	-23	-25	30	23	4370	25	103	800	950	180	2.3	0.4	0.32	0.41	0.600	0.300	0.140	0.044	0.310
Mount Forest	420	-21	-24	28	22	4700	28	103	740	940	140	2.7	0.4	0.32	0.41	0.130	0.087	0.055	0.018	0.043
Nakina	325	-36	-38	28	21	6500	20	86	540	750	100	2.8	0.4	0.23	0.30	0.095	0.057	0.026	0.008	0.036
Nanticoke (Jarvis)	205	-17	-18	30	23	3700	28	108	840	900	160	1.4	0.4	0.37	0.48	0.220	0.120	0.062	0.019	0.120
Nanticoke (Port Dover)	180	-15	-17	30	24	3600	25	108	860	950	140	1.2	0.4	0.37	0.48	0.190	0.110	0.060	0.018	0.093
Napanee	90	-22	-24	29	23	4140	23	92	770	900	160	1.9	0.4	0.33	0.43	0.280	0.170	0.094	0.030	0.110
New Liskeard	180	-32	-35	30	22	5570	23	92	570	810	100	2.3	0.4	0.33	0.43	0.240	0.140	0.078	0.025	0.120
Newcastle	115	-20	-22	30	23	3990	23	86	760	830	160	1.5	0.4	0.37	0.48	0.200	0.130	0.074	0.024	0.081
Newcastle (Bowmanville)	95	-20	-22	30	23	4000	23	86	760	830	160	1.4	0.4	0.37	0.48	0.200	0.130	0.073	0.023	0.078
Newmarket	185	-22	-24	30	23	4260	28	108	700	800	140	2.0	0.4	0.29	0.38	0.160	0.110	0.065	0.021	0.051
Niagara Falls	210	-16	-18	30	23	3600	23	96	810	950	160	2.0	0.4	0.33	0.43	0.340	0.190	0.070	0.023	0.200
North Bay	210	-28	-30	28	22	5150	25	95	775	975	120	2.2	0.4	0.27	0.34	0.250	0.150	0.079	0.027	0.110
Norwood	225	-24	-26	30	23	4320	25	92	720	850	120	2.1	0.4	0.32	0.41	0.210	0.140	0.083	0.027	0.070
Oakville	90	-18	-20	30	23	3760	23	97	750	850	160	0.9	0.4	0.36	0.47	0.320	0.170	0.065	0.022	0.180
Orangeville	430	-21	-23	29	23	4450	28	108	730	875	140	2.3	0.4	0.28	0.36	0.150	0.097	0.060	0.020	0.051
Orillia	230	-25	-27	29	23	4260	25	103	740	1000	120	2.4	0.4	0.28	0.36	0.160	0.110	0.068	0.023	0.046
Oshawa	110	-19	-21	30	23	3860	23	86	760	875	160	1.4	0.4	0.37	0.48	0.190	0.120	0.072	0.023	0.074
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

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Table 1.2 (Cont'd)  
Design Data for Selected Locations in Ontario

Location	Elevation, m	Design Temperature				Degree Days Below 18°C	15 Min Rainfall, mm	One Day Rainfall, 1/50, mm	Annual Rainfall, mm	Annual Total Precipitation, mm	Driving Rain Wind Pressures, Pa, 1/5	Snow Load, kPa, 1/50		Hourly Wind Pressures, kPa	Seismic Data					
		January 2.5%, °C	January 1%, °C	July 2.5%								S <sub>s</sub>	S <sub>r</sub>		1/10	S <sub>a</sub> (0.2)	S <sub>a</sub> (0.5)	S <sub>a</sub> (1.0)	S <sub>a</sub> (2.0)	PGA
				Dry, °C	Wet, °C															
Point Alexander	150	-29	-32	30	22	4960	23	92	650	850	100	2.5	0.4	0.27	0.35	0.630	0.300	0.130	0.043	0.320
Port Burwell	195	-15	-17	30	24	3800	25	92	930	1000	180	1.2	0.4	0.36	0.47	0.170	0.099	0.058	0.018	0.092
Port Colborne	180	-15	-17	30	24	3600	23	108	850	1000	160	2.3	0.4	0.36	0.46	0.330	0.180	0.066	0.022	0.190
Port Elgin	205	-17	-19	28	22	4100	25	92	790	850	180	2.8	0.4	0.43	0.55	0.110	0.078	0.051	0.017	0.036
Port Hope	100	-21	-23	29	23	3970	23	94	760	825	180	1.2	0.4	0.37	0.48	0.210	0.130	0.077	0.024	0.094
Port Perry	270	-22	-24	30	23	4260	25	97	720	850	140	2.4	0.4	0.34	0.44	0.170	0.120	0.070	0.023	0.053
Port Stanley	180	-15	-17	31	24	3850	25	92	940	975	180	1.2	0.4	0.36	0.47	0.170	0.099	0.055	0.017	0.090
Prescott	90	-23	-25	29	23	4120	25	103	770	975	180	2.2	0.4	0.34	0.44	0.420	0.240	0.120	0.038	0.018
Princeton	280	-18	-20	30	23	4000	25	97	810	925	160	1.5	0.4	0.33	0.42	0.160	0.100	0.059	0.018	0.082
Raith	475	-34	-37	28	22	5900	23	97	570	750	120	2.7	0.4	0.23	0.30	0.095	0.057	0.026	0.008	0.036
Rayside-Balfour (Chelmsford)	270	-28	-30	29	21	5200	25	92	650	850	180	2.5	0.4	0.35	0.45	0.140	0.097	0.057	0.020	0.045
Red Lake	360	-35	-37	28	21	6220	20	92	470	630	120	2.4	0.3	0.23	0.30	0.095	0.057	0.026	0.008	0.036
Renfrew	115	-27	-30	30	23	4900	23	97	620	810	140	2.5	0.4	0.27	0.35	0.580	0.290	0.130	0.043	0.300
Richmond Hill	230	-21	-23	31	24	4000	25	97	740	850	140	1.5	0.4	0.34	0.44	0.180	0.110	0.065	0.021	0.063
Rockland	50	-26	-28	30	23	4600	23	92	780	950	160	2.4	0.4	0.31	0.40	0.600	0.300	0.140	0.045	0.310
Sarnia	190	-16	-18	31	24	3750	25	100	750	825	180	1.1	0.4	0.36	0.47	0.120	0.073	0.048	0.015	0.037
Sault Ste. Marie	190	-25	-28	29	22	4960	23	97	660	950	200	3.1	0.4	0.34	0.44	0.095	0.057	0.032	0.012	0.036
Schreiber	310	-34	-36	27	21	5960	20	103	600	850	160	3.3	0.4	0.30	0.39	0.095	0.057	0.026	0.008	0.036
Seaforth	310	-17	-19	30	23	4100	25	108	810	1025	160	2.5	0.4	0.37	0.48	0.120	0.080	0.051	0.017	0.040
Shelburne	495	-22	-24	29	23	4700	28	108	740	900	150	3.1	0.4	0.31	0.40	0.140	0.094	0.059	0.020	0.046
Simcoe	210	-17	-19	30	24	3700	28	113	860	950	160	1.3	0.4	0.35	0.45	0.180	0.100	0.060	0.018	0.093
Sioux Lookout	375	-34	-36	28	22	5950	25	97	520	710	100	2.4	0.3	0.23	0.30	0.095	0.057	0.026	0.008	0.036
Smiths Falls	130	-25	-27	30	23	4540	25	92	730	850	140	2.3	0.4	0.32	0.41	0.390	0.220	0.120	0.037	0.170
Smithville	185	-16	-18	30	23	3650	23	108	800	900	160	1.5	0.4	0.33	0.42	0.340	0.180	0.068	0.022	0.200
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

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Table 1.2 (Cont'd)  
Design Data for Selected Locations in Ontario

Location	Elevation, m	Design Temperature				Degree Days Below 18°C	15 Min Rainfall, mm	One Day Rainfall, 1/50, mm	Annual Rainfall, mm	Annual Total Precipitation, mm	Driving Rain Wind Pressures, Pa, 1/5	Snow Load, kPa, 1/50		Hourly Wind Pressures, kPa		Seismic Data				
		January		July 2.5%								S <sub>s</sub>	S <sub>t</sub>	1/10	1/50	S <sub>a</sub> (0.2)	S <sub>a</sub> (0.5)	S <sub>a</sub> (1.0)	S <sub>a</sub> (2.0)	PGA
		2.5%, °C	1%, °C	Dry, °C	Wet, °C															
Smooth Rock Falls	235	-34	-36	29	21	6250	20	92	560	850	80	2.7	0.3	0.25	0.32	0.160	0.089	0.049	0.017	0.085
South River	355	-27	-29	29	22	5090	25	103	830	975	120	2.8	0.4	0.27	0.35	0.230	0.140	0.077	0.027	0.086
Southampton	180	-17	-19	28	22	4100	25	92	800	830	180	2.7	0.4	0.41	0.53	0.110	0.078	0.051	0.017	0.036
St. Catharines	105	-16	-18	30	23	3540	23	92	770	850	160	1.0	0.4	0.36	0.46	0.340	0.190	0.069	0.023	0.200
St. Mary's	310	-18	-20	30	23	4000	28	108	820	1025	160	2.2	0.4	0.36	0.47	0.140	0.086	0.054	0.017	0.049
St. Thomas	225	-16	-18	31	24	3780	25	103	900	975	180	1.4	0.4	0.36	0.47	0.160	0.096	0.056	0.017	0.088
Stirling	120	-23	-25	30	23	4220	25	97	740	850	120	1.7	0.4	0.31	0.40	0.250	0.160	0.088	0.028	0.096
Stratford	360	-18	-20	29	23	4050	28	113	820	1050	160	2.3	0.4	0.35	0.45	0.140	0.087	0.055	0.018	0.045
Strathroy	225	-17	-19	31	24	3780	25	103	770	950	180	1.9	0.4	0.36	0.47	0.140	0.086	0.052	0.016	0.064
Sturgeon Falls	205	-28	-30	29	21	5200	25	95	700	910	140	2.2	0.4	0.27	0.35	0.220	0.130	0.072	0.025	0.086
Sudbury	275	-28	-30	29	21	5180	25	97	650	875	200	2.5	0.4	0.36	0.46	0.150	0.100	0.059	0.020	0.051
Sundridge	340	-27	-29	29	22	5080	25	97	840	975	120	2.8	0.4	0.27	0.35	0.230	0.140	0.076	0.026	0.082
Tavistock	340	-19	-21	29	23	4100	28	113	820	1010	160	2.1	0.4	0.35	0.45	0.140	0.090	0.056	0.018	0.053
Temagami	300	-30	-33	30	22	5420	23	92	650	875	120	2.6	0.4	0.29	0.37	0.250	0.150	0.077	0.026	0.120
Thamesford	280	-19	-21	30	23	3950	28	108	820	975	160	1.9	0.4	0.37	0.48	0.160	0.095	0.056	0.018	0.076
Theedford	205	-16	-18	31	23	3710	25	103	810	900	180	2.1	0.4	0.39	0.50	0.120	0.077	0.050	0.016	0.038
Thunder Bay	210	-31	-33	29	21	5650	23	108	560	710	160	2.9	0.4	0.30	0.39	0.095	0.057	0.026	0.008	0.036
Tilsonburg	215	-17	-19	30	24	3840	25	103	880	980	160	1.3	0.4	0.34	0.44	0.170	0.100	0.058	0.018	0.091
Timmins	300	-34	-36	29	21	5940	20	108	560	875	100	3.1	0.3	0.27	0.35	0.140	0.090	0.054	0.018	0.056
Timmins (Porcupine)	295	-34	-36	29	21	6000	20	103	560	875	100	2.9	0.3	0.29	0.37	0.160	0.094	0.056	0.018	0.068
Toronto (Metropolitan)																				
Etobicoke	160	-20	-22	31	24	3800	26	108	720	800	160	1.1	0.4	0.34	0.44	0.210	0.120	0.065	0.021	0.110
North York	175	-20	-22	31	24	3760	25	108	730	850	150	1.2	0.4	0.34	0.44	0.190	0.110	0.066	0.021	0.078
Scarborough	180	-20	-22	31	24	3800	25	92	730	825	160	1.2	0.4	0.36	0.47	0.190	0.110	0.068	0.022	0.076
Toronto (City Hall)	90	-18	-20	31	23	3520	25	97	720	820	160	0.9	0.4	0.34	0.44	0.220	0.130	0.067	0.021	0.120
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

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Table 1.2 (Cont'd)  
Design Data for Selected Locations in Ontario

Location	Elevation, m	Design Temperature				Degree Days Below 18°C	15 Min Rainfall, mm	One Day Rainfall, 1/50, mm	Annual Rainfall, mm	Annual Total Precipitation, mm	Driving Rain Wind Pressures, Pa, 1/5	Snow Load, kPa, 1/50		Hourly Wind Pressures, kPa		Seismic Data				
		January		July 2.5%								S <sub>s</sub>	S <sub>i</sub>	1/10	1/50	S <sub>s</sub> (0.2)	S <sub>s</sub> (0.5)	S <sub>s</sub> (1.0)	S <sub>s</sub> (2.0)	PGA
		2.5%, °C	1%, °C	Dry, °C	Wet, °C															
Trenton	80	-22	-24	29	23	4110	23	97	760	850	160	1.6	0.4	0.36	0.47	0.240	0.150	0.085	0.027	0.099
Trout Creek	330	-27	-29	29	22	5100	25	103	780	975	120	2.7	0.4	0.27	0.35	0.240	0.150	0.078	0.027	0.095
Uxbridge	275	-22	-24	30	23	4240	25	103	700	850	140	2.4	0.4	0.33	0.42	0.160	0.110	0.069	0.022	0.049
Vaughan (Woodbridge)	165	-20	-22	31	24	4100	26	113	700	800	140	1.1	0.4	0.34	0.44	0.190	0.110	0.064	0.021	0.081
Victoria	215	-15	-17	30	24	3680	25	113	880	950	160	1.3	0.4	0.36	0.47	0.180	0.100	0.060	0.018	0.093
Walkerton	275	-18	-20	30	22	4300	28	103	790	1025	160	2.7	0.4	0.39	0.50	0.120	0.081	0.052	0.018	0.038
Wallaceburg	180	-16	-18	31	24	3600	28	97	760	825	180	0.9	0.4	0.35	0.45	0.150	0.085	0.047	0.015	0.071
Waterloo	330	-19	-21	29	23	4200	28	119	780	925	160	2.0	0.4	0.29	0.37	0.150	0.094	0.058	0.018	0.052
Watford	240	-17	-19	31	24	3740	25	108	790	950	160	1.9	0.4	0.36	0.47	0.130	0.081	0.050	0.016	0.050
Wawa	290	-34	-36	26	21	5840	20	93	725	950	160	4.1	0.4	0.30	0.39	0.095	0.057	0.028	0.010	0.036
Welland	180	-15	-17	30	23	3670	23	103	840	975	160	2.2	0.4	0.33	0.43	0.340	0.180	0.068	0.022	0.200
West Lorne	215	-16	-18	31	24	3700	28	103	840	900	180	1.3	0.4	0.36	0.47	0.160	0.095	0.054	0.016	0.088
Whitby	85	-20	-22	30	23	3820	23	86	760	850	160	1.2	0.4	0.37	0.48	0.190	0.120	0.071	0.022	0.075
Whitby (Brooklin)	160	-20	-22	30	23	4010	23	86	770	850	140	1.9	0.4	0.35	0.45	0.180	0.120	0.070	0.023	0.066
White River	375	-39	-42	28	21	6150	20	92	575	825	100	4.5	0.4	0.23	0.30	0.095	0.057	0.026	0.009	0.036
Warton	185	-19	-21	29	22	4300	25	103	740	1000	180	2.7	0.4	0.37	0.48	0.110	0.083	0.053	0.018	0.036
Windsor	185	-16	-18	32	24	3400	28	103	800	900	180	0.8	0.4	0.36	0.47	0.150	0.085	0.045	0.014	0.073
Wingham	310	-18	-20	30	23	4220	28	108	780	1050	160	2.6	0.4	0.39	0.50	0.120	0.079	0.051	0.017	0.039
Woodstock	300	-19	-21	30	23	3910	28	113	830	930	160	1.9	0.4	0.34	0.44	0.160	0.098	0.058	0.018	0.079
Wyoming	215	-16	-18	31	24	3700	25	103	815	900	180	1.6	0.4	0.36	0.47	0.130	0.077	0.049	0.015	0.043
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

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# **MMAH Supplementary Standard SB-2**

## **Fire Performance Ratings**

**September 2, 2014 update**

**COMMENCEMENT**

MMAH Supplementary Standard SB-2 comes into force on the 1st day of January, 2014.

r5 SB-2 as amended by Ontario Regulation 191/14 comes into force on the 1st day of January, 2015.

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# SB-2 Fire-Performance Ratings

## Section 1 General

This Supplementary Standard is based in large measure on Appendix D of the National Building Code of Canada 2010. The content of Appendix D was prepared on the recommendations of the Standing Committee on Fire Performance Ratings, which was established by the Canadian Commission on Building and Fire Codes (CCBFC) for this purpose.

### 1.1. Introduction

#### 1.1.1. Scope

- (1) This fire-performance information is presented in a form closely linked to the performance requirements and the minimum materials specifications of the 2012 Building Code.
- (2) The ratings have been assigned only after careful consideration of all available literature on assemblies of common building materials, where they are adequately identified by description. The assigned values based on this information will, in most instances, be conservative when compared to the ratings determined on the basis of actual tests on individual assemblies.
- (3) The fire-performance information set out in this Supplementary Standard applies to materials and assemblies of materials which comply in all essential details with the minimum structural design standards described in Part 4 of Division B in the 2012 Building Code. Additional requirements, where appropriate, are described in other Sections of this Supplementary Standard.
- (4) Section 2 of this Supplementary Standard assigns fire-resistance ratings for walls, floors, roofs, columns and beams related to CAN/ULC-S101, "Fire Endurance Tests of Building Construction and Materials", and describes methods for determining these ratings.
- (5) Section 3 assigns flame-spread ratings and smoke developed classifications for surface materials related to CAN/ULC-S102, "Test for Surface Burning Characteristics of Building Materials and Assemblies" and CAN/ULC-S102.2, "Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies".
- (6) Section 4 describes noncombustibility in building materials when tested in accordance with CAN/ULC-S114, "Test for Determination of Non-Combustibility in Building Materials".
- (7) Section 5 contains requirements for the installation of fire doors and fire dampers in fire-rated stud wall assemblies and the installation of fire stop flaps in fire-rated membrane ceilings.
- (8) Section 6 contains background information regarding fire test reports, obsolete materials and assemblies, assessment of archaic assemblies and the development of the component additive method.

### 1.1.2. Referenced Documents

(1) Where documents are referenced in this Supplementary Standard, they shall be the editions designated in Table 1.1.2.

Table 1.1.2.  
Documents Referenced in SB-2 Fire-Performance Ratings

Issuing Agency	Document Number	Title of Document	Reference
ANSI	A208.1-2009	Particleboard	Table 3.1.1.A.
ASTM	C330 / C330M-09	Lightweight Aggregates for Structural Concrete	1.4.3.(2)
ASTM	C1396 / C1396M-11	Gypsum Board	1.5.1.; Table 3.1.1.A.
CCBFC	NRCC 30629	Supplement to the National Building Code of Canada 1990	6.2.; 6.3.; 6.4.
CGSB	4-GP-36M-1978	Carpet Underlay, Fibre Type	Table 3.1.1.B.
CGSB	CAN/CGSB-4.129-97	Carpets for Commercial Use	Table 3.1.1.B.
CGSB	CAN/CGSB-11.3-M87	Hardboard	Table 3.1.1.A.
CGSB	CGSB-92.2-M90	Trowel or Spray Applied Acoustical Material	2.3.4.(5)
CSA	A23.1-09 / A23.2-09	Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete	1.4.3.(1)
CSA	A23.3-04	Design of Concrete Structures	2.1.5. (2); 2.6.6.(1) Table 2.6.6.B. 2.8.2.(1); Table 2.8.2.
CSA	A82.5-M1978	Structural Clay Non-Load-Bearing Tile	Table 2.6.1.A.
CSA	A82.22-M1977	Gypsum Plasters	Table 3.1.1.A.
CSA	CAN/CSA-A82.27-M91	Gypsum Board	1.5.1.; Table 3.1.1.A.
CSA	A82.30-M1980	Interior Furring, Lathing and Gypsum Plastering	1.7.2.(1); 2.3.9.(1) Table 2.5.1.
CSA	A82.31-M1980	Gypsum Board Application	2.3.9.(1); 2.3.9.(6)
CSA	CAN/CSA-A165.1-04	Concrete Block Masonry Units	Table 2.1.1.
CSA	O86-09	Engineering Design in Wood	2.11.2.(1); 2.11.2.(2)
CSA	O121-08	Douglas Fir Plywood	Table 3.1.1.A.
CSA	O141-05	Softwood Lumber	2.3.6.(2); Table 2.4.1.
CSA	O151-09	Canadian Softwood Plywood	Table 3.1.1.A.
CSA	O153-M1980	Poplar Plywood	Table 3.1.1.A.
CSA	O325-07	Construction Sheathing	Table 3.1.1.A.
CSA	O437.0-93	OSB and Waferboard	Table 3.1.1.A.
CSA	S16-09	Design of Steel Structures	2.6.6.(1); 2.6.6.(2) Table 2.6.6.B.
Column 1	2	3	4



Table 1.1.2. (Cont'd)  
Documents Referenced in SB-2 Fire-Performance Ratings

	Issuing Agency	Document Number	Title of Document	Code Reference
r <sub>5</sub>	NFPA	80-2010	Fire Doors and Other Opening Protectives	5.2.1.(1); 5.2.1.(2)
	ULC	CAN/ULC-S101-07	Fire Endurance Tests of Building Construction and Materials	1.1.1.(4); 1.12.1.2.3.2.
r <sub>5</sub>	ULC	CAN/ULC-S102-10	Test for Surface Burning Characteristics of Building Materials and Assemblies	1.1.1.(5)
r <sub>5</sub>	ULC	CAN/ULC-S102.2-10	Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies	1.1.1.(5) Table 3.1.1.B.
	ULC	CAN/ULC-S114-05	Test for Determination of Non-Combustibility in Building Materials	1.1.1.(6) 4.1.1.; 4.2.1.
	ULC	ULC S505-1974	Fusible Links for Fire Protection Service	5.3.2.
	ULC	CAN/ULC-S702-09	Mineral Fibre Thermal Insulation for Buildings	Table 2.3.4.A. Table 2.3.4.D. 2.3.5.(2); 2.3.5.(4) Table 2.6.1.E.; 6.4.
r <sub>5</sub>	ULC	CAN/ULC-S703-09	Cellulose Fibre Insulation (CFI) for Buildings	2.3.4.(5)
r <sub>5</sub>	ULC	CAN/ULC-S706-09	Wood Fibre Thermal Insulation for Buildings	Table 3.1.1.A.
	Column 1	2	3	4

### 1.1.3. Applicability of Ratings

(1) The ratings shown in this document apply if more specific test values are not available. The construction of an assembly that is the subject of an individual test report must be followed in all essential details if the fire-resistance rating reported is to be applied for use with the Building Code.

### 1.1.4. Higher Ratings

(1) The authority having jurisdiction may allow higher fire-resistance ratings than those derived from this Supplementary Standard, where supporting evidence justifies a higher rating. Additional information is provided in summaries of published test information and the reports of fire tests carried out by the Institute for Research in Construction, National Research Council of Canada, included in Section 6, Background Information.

### 1.1.5. Additional Information on Fire Rated Assemblies

(1) Assemblies containing materials for which there is no nationally recognized standard are not included in this Supplementary Standard. Many such assemblies have been rated by Underwriters Laboratories (UL), Underwriters' Laboratories of Canada (ULC) or Intertek Testing Services NA Ltd. (ITS). The UL "Fire Resistance Directory", Volume 1, can be obtained from UL, 333 Pfingsten Road, Northbrook, Illinois 60062-2096 U.S.A. The ULC information is published in their "List of Equipment and Materials - Fire Resistance". Copies of this document may be obtained from ULC, 7 Underwriters Road, Toronto, Ontario M1R 3B4. ITS' Directory of Listed Products can be obtained from ITS, 3210 American Drive, Mississauga, Ontario L4V 1B3.

## **1.2. Interpretation of Test Results**

### **1.2.1. Limitations**

- (1) The fire-performance ratings set out in this Supplementary Standard are based on those that would be obtained from the standard methods of test described in the Building Code. The test methods are essentially a means of comparing the performance of one building component or assembly with another in relation to its performance in fire.
- (2) Since it is not practicable to measure the fire resistance of constructions in situ, they must be evaluated under some agreed test conditions. A specified fire-resistance rating is not necessarily the actual time that the assembly would endure in situ in a building fire, but is that which the particular construction must meet under the specified methods of test.
- (3) Considerations arising from departures in use from the conditions established in the standard test methods may, in some circumstances, have to be taken into account by the designer and the authority having jurisdiction. Some of these conditions are covered at present by the provisions of the Building Code.
- (4) For walls and partitions, the stud spacings previously specified as 16 and 24 inch on centre have been converted to 406 and 610 mm respectively to represent actual stud spacing used in the field to accommodate modular sheathing panel dimensions. These metric dimensions are deemed to comply with test results based on reported stud spacing of 400 mm or 600 mm on centre.

## **1.3. Concrete**

### **1.3.1. Aggregates in Concrete**

- (1) Low density aggregate concretes generally exhibit better fire performance than natural stone aggregate concretes. A series of tests on concrete masonry walls, combined with mathematical analysis of the test results, has allowed further distinctions between certain low density aggregates to be made.

## **1.4. Types of Concrete**

### **1.4.1. Description**

- (1) For purposes of this Supplementary Standard, concretes are described as Types S, N, L, L<sub>1</sub>, L<sub>2</sub>, L40S, L<sub>1</sub>20S or L<sub>2</sub>20S as described in Sentences (2) to (8).
- (2) Type S concrete is the type in which the coarse aggregate is granite, quartzite, siliceous gravel or other dense materials containing at least 30% quartz, chert or flint.
- (3) Type N concrete is the type in which the coarse aggregate is cinders, broken brick, blast furnace slag, limestone, calcareous gravel, trap rock, sandstone or similar dense material containing not more than 30% of quartz, chert or flint.
- (4) Type L concrete is the type in which all the aggregate is expanded slag, expanded clay, expanded shale or pumice.
- (5) Type L<sub>1</sub> concrete is the type in which all the aggregate is expanded shale.
- (6) Type L<sub>2</sub> concrete is the type in which all the aggregate is expanded slag, expanded clay or pumice.
- (7) Type L40S concrete is the type in which the fine portion of the aggregate is sand and low density aggregate in which the sand does not exceed 40% of the total volume of all aggregates in the concrete.
- (8) Type L<sub>1</sub>20S and Type L<sub>2</sub>20S concretes are the types in which the fine portion of the aggregate is sand and low density aggregate in which the sand does not exceed 20% of the total volume of all aggregates in the concrete.

### 1.4.2. Determination of Ratings

(1) Where concretes are described as being of Type S, N, L, L<sub>1</sub> or L<sub>2</sub>, the rating applies to the concrete containing the aggregate in the group that provides the least fire resistance. If the nature of an aggregate cannot be determined accurately enough to place it in one of the groups, the aggregate shall be considered as being in the group that requires a greater thickness of concrete for the required fire resistance.

### 1.4.3. Description of Aggregates

(1) The descriptions of the aggregates in Type S and Type N concretes apply to the coarse aggregates only. Coarse aggregate for this purpose means that retained on a 5 mm sieve using the method of grading aggregates described in CSA A23.1 / A23.2, "Concrete Materials and Methods of Concrete Construction / Test Methods and Standard Practices for Concrete".

r<sub>5</sub> (2) Increasing the proportion of sand as fine aggregate in low density concretes requires increased thicknesses of material to produce equivalent fire-resistance ratings. Low density aggregates for Type L and Types L-S concretes used in loadbearing components shall conform to ASTM C330 / C330M, "Lightweight Aggregates for Structural Concrete".

(3) Non-loadbearing low density components of vermiculite and perlite concrete, in the absence of other test evidence, shall be rated on the basis of the values shown for Type L concrete.

## 1.5. Gypsum Wallboard

### 1.5.1. Types of Wallboard

(1) Where the term gypsum wallboard is used in this Supplementary Standard, it is intended to include, in addition to gypsum wallboard, gypsum backing board and gypsum base for veneer plaster as described in

- (a) CSA A82.27-M, "Gypsum Board", or
- (b) ASTM C1396 / C1396M, "Gypsum Board".

(2) Where the term Type X gypsum wallboard is used in this Supplementary Standard, it applies to special fire-resistant board as described in

- (a) CSA A82.27-M, "Gypsum Board", or
- (b) ASTM C1396 / C1396M, "Gypsum Board".

## 1.6. Equivalent Thickness

### 1.6.1. Method of Calculating

(1) The thickness of solid-unit masonry and concrete described in this Supplementary Standard shall be the thickness of solid material in the unit or component thickness. For units that contain cores or voids, the Tables refer to the equivalent thickness determined in conformance with Sentences (2) to (10).

(2) Where a plaster finish is used, the equivalent thickness of a wall, floor, column or beam protection shall be equal to the sum of the equivalent thicknesses of the concrete or masonry units and the plaster finish measured at the point that will give the least value of equivalent thickness.

(3) Except as provided in Sentence (5), the equivalent thickness of a hollow masonry unit shall be calculated as equal to the actual overall thickness of a unit in millimetres multiplied by a factor equal to the net volume of the unit and divided by its gross volume.

(4) Net volume shall be determined using a volume displacement method that is not influenced by the porous nature of the units.

- (5) Gross volume of a masonry unit shall be equal to the actual length of the unit multiplied by the actual height of the unit multiplied by the actual thickness of the unit.
- (6) Where all the core spaces in a wall of hollow concrete masonry or hollow-core precast concrete units are filled with grout, mortar, or loose fill materials such as expanded slag, burned clay or shale (rotary kiln process), vermiculite or perlite, the equivalent thickness rating of the wall shall be considered to be the same as that of a wall of solid units, or a solid wall of the same concrete type and the same overall thickness.
- (7) The equivalent thickness of hollow-core concrete slabs and panels having a uniform thickness and cores of constant cross section throughout their length shall be obtained by dividing the net cross-sectional area of the slab or panel by its width.
- (8) The equivalent thickness of concrete panels with tapered cross sections shall be the cross section determined at a distance of  $2t$  or 150 mm, whichever is less, from the point of minimum thickness, where  $t$  is the minimum thickness.
- (9) Except as permitted in Sentence (10), the equivalent thickness of concrete panels with ribbed or undulating surfaces shall be
- $t_a$  for  $s$  less than or equal to  $2t$ ,
  - $t + (4t/s - 1)(t_a - t)$  for  $s$  less than  $4t$  and greater than  $2t$ , and
  - $t$  for  $s$  greater than or equal to  $4t$
- where
- $t$  = minimum thickness of panel,
- $t_a$  = average thickness of panel (unit cross-sectional area divided by unit width), and
- $s$  = centre to centre spacing of ribs or undulations.
- (10) Where the total thickness of a panel described in Sentence (9), exceeds  $2t$ , only that portion of the panel which is less than  $2t$  from the non-ribbed surface shall be considered for the purpose of the calculations in Sentence (9).

## **1.7. Contribution of Plaster or Gypsum Wallboard Finish to Fire Resistance of Masonry or Concrete**

### **1.7.1. Determination of Contribution**

- (1) Except as provided in Sentences (2) to (5), the contribution of a plaster or gypsum wallboard finish to the fire resistance of a masonry or concrete wall, floor or roof assembly shall be determined by multiplying the actual thickness of the finish by the factor shown in Table 1.7.1., depending on the type of masonry or concrete to which it is applied. This corrected thickness shall then be included in the equivalent thickness as described in Subsection 1.6.
- (2) Where a plaster or gypsum wallboard finish is applied to a concrete or masonry wall, the calculated fire-resistance rating of the assembly shall not exceed twice the fire-resistance rating provided by the masonry or concrete because structural collapse may occur before the limiting temperature is reached on the surface of the non-fire-exposed side of the assembly.
- (3) Where a plaster or gypsum wallboard finish is applied only on the non-fire-exposed side of a hollow clay tile wall, no increase in fire resistance is permitted because structural collapse may occur before the limiting temperature is reached on the surface of the non-fire-exposed side of the assembly.
- (4) The contribution to fire resistance of a plaster or gypsum wallboard finish applied to the non-fire-exposed side of a monolithic concrete or unit masonry wall shall be determined in conformance with Sentence (1), but shall not exceed 0.5 times the contribution of the concrete or masonry wall.

# **MMAH Supplementary Standard SB-3**

## **Fire and Sound Resistance of Building Assemblies**

**September 2, 2014 update**

**COMMENCEMENT**

MMAH Supplementary Standard SB-3 comes into force on the 1st day of January, 2014.

r5 SB-3 as amended by Ontario Regulation 191/14 comes into force on the 1st day of January, 2015.

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Table 2 (Cont'd)  
Fire and Sound Resistance of Floors, Ceilings and Roofs

Type of Assembly	Assembly Number	Description <sup>(1)(2)(3)</sup>	Fire-Resistance Rating <sup>(4)(5)(6)(7)</sup>	Typical Sound Transmission Class <sup>(4)(5)(8)(9)</sup> (STC)	Typical Impact Insulation Class <sup>(4)(8)(10)</sup> (IIC)
Floors and Ceilings					
Cold Formed Steel Floor Joists <sup>(25)</sup>	F61f	F61 with <ul style="list-style-type: none"> <li>• steel joists spaced 610 mm o.c.</li> <li>• absorptive material in cavity</li> <li>• resilient metal channels spaced 610 mm o.c.</li> <li>• 15.9 mm Type X gypsum board</li> </ul>	—	71	34
	F61g	F61 with <ul style="list-style-type: none"> <li>• no absorptive material in cavity</li> <li>• resilient metal channels spaced 406 mm o.c.</li> <li>• 12.7 mm Type X gypsum board</li> </ul>	1 h	62	32
	F61h	F61 with <ul style="list-style-type: none"> <li>• steel joists spaced 406 mm o.c.</li> <li>• no absorptive material in cavity</li> <li>• resilient metal channels spaced 610 mm o.c.</li> <li>• 12.7 mm Type X gypsum board</li> </ul>	1 h	64	32
	F61i	F61 with <ul style="list-style-type: none"> <li>• steel joists spaced 610 mm o.c.</li> <li>• no absorptive material in cavity</li> <li>• resilient metal channels spaced 610 mm o.c.</li> <li>• 12.7 mm Type X gypsum board</li> </ul>	—	64	28
	F61j	F61 with <ul style="list-style-type: none"> <li>• absorptive material in cavity</li> <li>• resilient metal channels spaced 406 mm o.c.</li> <li>• 12.7 mm Type X gypsum board</li> </ul>	1 h	68	36
	F61k	F61 with <ul style="list-style-type: none"> <li>• steel joists spaced 406 mm o.c.</li> <li>• absorptive material in cavity</li> <li>• resilient metal channels spaced 610 mm o.c.</li> <li>• 12.7 mm Type X gypsum board</li> </ul>	1 h	64	32
	F61l	F61 with <ul style="list-style-type: none"> <li>• steel joists spaced 610 mm o.c.</li> <li>• no absorptive material in cavity</li> <li>• resilient metal channels spaced 610 mm o.c.</li> <li>• 12.7 mm Type X gypsum board</li> </ul>	—	70	34
	Column 1	2	3	4	5

Table 2 (Cont'd)  
Fire and Sound Resistance of Floors, Ceilings and Roofs

Type of Assembly	Assembly Number	Description <sup>(1)(2)(3)</sup>	Fire-Resistance Rating <sup>(4)(5)(6)(7)</sup>	Typical Sound Transmission Class <sup>(4)(5)(8)(9)</sup> (STC)	Typical Impact Insulation Class <sup>(4)(8)(10)</sup> (IIC)
Roofs					
Wood Roof Trusses	R1	<ul style="list-style-type: none"> <li>wood roof trusses spaced not more than 610 mm o.c.</li> <li>1 layer 15.9 mm Type X gypsum board</li> </ul>	45 min	—	—
Roofs - Rating Provided by Membrane Only					
	M1	<ul style="list-style-type: none"> <li>supporting members spaced not more than 610 mm o.c.</li> <li>1 layer 15.9 mm Type X gypsum board</li> </ul>	30 min	—	—
	M2	<ul style="list-style-type: none"> <li>supporting members spaced not more than 610 mm o.c.</li> <li>2 layers 15.9 mm Type X gypsum board</li> </ul>	1 h	—	—
Column 1	2	3	4	5	6

Notes to Table 2:

- (1) For assemblies with a ceiling consisting of a single layer of gypsum board on resilient metal channels to obtain the listed ratings, the resilient metal channel arrangement at the gypsum board butt end joints should be as shown in Figure 1.
- (2) For assemblies with a ceiling consisting of 2 layers of gypsum board on resilient metal channels to obtain the listed ratings, the fastener and resilient metal channel arrangement at the gypsum board butt end joints should be as shown in Figure 2.
- rs (3) The fire-resistance rating and sound transmission class values given are for a minimum thickness of subfloor or deck as shown. Minimum subfloor thickness required is determined by structural member spacing (see Table 9.23.14.5.A. of Division B. Thicker subflooring or decking is also acceptable.

(4) Sound absorptive material includes

  - (i) fibre processed from rock, slag or glass, and
  - (ii) loose-fill or spray-applied cellulose fibre.

To obtain the listed sound transmission class rating, the nominal insulation thickness is 150 mm for rock, slag, or glass fibres or loose-fill cellulose fibre, and 90 mm for spray-applied cellulose fibre, unless otherwise specified. Absorptive material will affect the sound transmission class by approximately adding or subtracting 1 per 50 mm change of thickness. However, no additional sound transmission class value is achieved by adding a greater thickness of insulation than the depth of the assembly.
- (5) The fire-resistance rating and sound transmission class values are based on the spacing of ceiling supports as noted. [See also Table Note (9)]. A narrower spacing will be detrimental to the sound transmission class rating, but not to the fire-resistance rating.
- (6) To obtain the listed rating, the type and spacing of fasteners are as described in and installed in accordance with Subsection 9.29.5. of Division B or CSA A82.31-M:
  - (i) fastener distance to board edges and butt ends shall be no less than 38 mm, except for fasteners on the butt ends of the base layer in ceilings with two layers (see Figure 2); and
  - (ii) fasteners are spaced not more than 305 mm o.c.
- (7) See Sentence 1.2.1.(2) in Supplementary Standard SB-2 for the significance of fire-resistance ratings.



- (8) The sound transmission class values given in the Table are for the minimum depth of structural member noted in the description and applicable Table notes. To obtain sound transmission class values for structural members deeper than that minimum, add 1 to the sound transmission class value in the Table for each 170 mm increase in structural member depth.
- (9) The sound transmission class values given in the Table are for structural member spacing of 305 mm o.c., unless otherwise noted in the description and applicable Table notes. To obtain sound transmission class values for assemblies with structural members spaced more than 500 mm o.c., add 1 to the sound transmission class value in the Table.
- (10) The impact insulation class values given are for floor assemblies tested with no finished flooring.
- (11) Wood floor joists are:
- (i) wood joists with a minimum member size of 38 mm (width) x 235 mm (depth), except as otherwise noted [See Table Note (14)]; or
  - (ii) wood I-joists with a minimum flange size of 38 mm x 38 mm, a minimum OSB or plywood web thickness of 9.5 mm, and a minimum joist depth of 241 mm.
- †5 (12) Except where assemblies with wood I-joists are tested according to CAN/ULC-S101, "Fire Endurance Tests of Building Construction and Materials", the fire-resistance rating values apply only to I-joists that have been fabricated with a phenolic-based structural wood adhesive complying with CSA O112.10, "Evaluation of Adhesives for Structural Wood Products (Limited Moisture Exposure)". For I-joists with flanges made of laminated veneer lumber (LVL), the fire-resistance rating values apply only where the adhesive used in the LVL fabrication is a phenolic-based structural wood adhesive complying with CSA O112.9, "Evaluation of Adhesives for Structural Wood Products (Exterior Exposure)".
- (13) The fire-resistance rating value within square brackets is achieved only where absorptive material includes spray-applied cellulose fibre with
- (i) adhesive that is capable of providing a minimum cohesive/adhesive bond strength per unit area of 5 times the weight of the material under the test plate when tested in accordance with ASTM E736,
  - (ii) a minimum density of 35 kg/m<sup>3</sup>, and
  - (iii) a minimum thickness of 90 mm on the underside of the subfloor or deck, of 90 mm on the sides of the structural members, and for cold-formed steel joists, of 13 mm on the underside of the bottom flange other than at resilient metal channel locations.
- (14) The fire-resistance rating value within square brackets only applies to assemblies with solid wood joists and is achieved only where absorptive material includes:
- (i) fibre processed from rock or slag with a minimum thickness of 90 mm and a minimum surface area mass of 2.8 kg/m<sup>2</sup>; or
  - (ii) spray-applied cellulose fibre with a minimum density of 50 kg/m<sup>3</sup> and a minimum depth of 90 mm on the underside of the subfloor and of 90 mm on the sides of the floor joists.
- (15) The fire-resistance rating, sound transmission class and impact insulation class values given are also applicable to assemblies with 38 mm (width) x 184 mm (depth) solid wood joists.
- (16) The fire-resistance rating value within square brackets is achieved only where absorptive material includes:
- (i) fibre processed from rock or slag with a minimum thickness of 90 mm and a minimum surface area mass of 2.8 kg/m<sup>2</sup>; or
  - (ii) spray-applied cellulose fibre with a minimum density of 50 kg/m<sup>3</sup> and a minimum depth of 90 mm on the underside of the subfloor and of 90 mm on the webs or the sides of the structural members.
- (17) The fire-resistance rating, sound transmission class and impact insulation class values within the square brackets only apply to assemblies with solid wood joists and are achieved only where absorptive material includes dry-blown cellulose fibre with a minimum density of 40 kg/m<sup>3</sup> filling the entire cavity; the cellulose fibre is supported on zinc-coated (galvanized) steel poultry fence fabric conforming to ASTM A390 which has 25 mm wide hexagonal mesh openings and 0.81 mm thick (20-gauge) wire and is attached to wood joists with metal staples having legs that are 50 mm long.

- (18) The fire-resistance rating and sound transmission class values are achieved only where absorptive material includes:
- fibre processed from rock or slag that fills the joist cavity and has a minimum surface area mass of  $2.8 \text{ kg/m}^2$ , and for structural members at least 270 mm in depth, the fibre includes three layers each of which has a minimum thickness of 90 mm; or
  - dry-blown cellulose fibre with a minimum density of  $40 \text{ kg/m}^3$  filling the entire cavity; the cellulose fibre is supported on zinc-coated (galvanized) steel poultry fence fabric conforming to ASTM A390 which has 25 mm wide hexagonal mesh openings and 0.81 mm thick (20-gauge) wire and is attached to wood joists or wood I-joists with metal staples having legs that are 50 mm or 30 mm long, respectively.
- (19) The fire-resistance rating value only applies to assemblies with wood I-joists with flanges with a minimum thickness of 38 mm and a minimum width of 63 mm.
- (20) The fire-resistance rating and sound transmission class values are achieved only where absorptive material includes:
- fibre processed from rock or slag that fills the joist cavity and has a minimum surface area mass of  $2.8 \text{ kg/m}^2$ , and for structural members at least 270 mm in depth, the fibre includes three layers each of which has a minimum thickness of 90 mm; or
  - dry-blown cellulose fibre with a minimum density of  $40 \text{ kg/m}^3$  filling the entire cavity; the cellulose fibre is supported on zinc-coated (galvanized) steel poultry fence fabric conforming to ASTM A390 which has 25 mm wide hexagonal mesh openings and 0.81 mm thick (20-gauge) wire and is attached to wood joists with metal staples having legs that are 50 mm long.
- (21) The fire-resistance rating values given only apply to assemblies with solid wood joists spaced not more than 406 mm o.c. No information is available for assemblies constructed with wood I-joists.
- (22) Wood floor trusses are:
- metal plate-connected wood trusses with wood framing members not less than 38 mm x 64 mm, metal connector plates not less than 1 mm (nominal) thick with teeth not less than 8 mm long, and a minimum truss depth of 305 mm;
  - metal web wood trusses with wood chords not less than 38 mm x 64 mm, V-shaped webs made from galvanized steel of 1 mm (nominal) thickness with plate areas having teeth not less than 8 mm long, and a minimum truss depth of 286 mm; or
  - finger-jointed wood trusses with glued finger-jointed connections, chord members not less than 38 mm x 64 mm, web members not less than 38 mm x 38 mm and a minimum truss depth of 330 mm, all of which is glued together with an R-14 phenol-resorcinol resin conforming to CSA O112.10.
- (23) The fire-resistance rating value within square brackets is achieved only where absorptive material includes fibre processed from rock or slag with a minimum thickness of 90 mm and a minimum surface area mass of  $2.8 \text{ kg/m}^2$ .
- (24) The fire-resistance rating and sound transmission class values within square brackets are achieved only where absorptive material includes dry-blown cellulose fibre with a minimum density of  $40 \text{ kg/m}^3$  filling the entire cavity; the cellulose fibre is supported on zinc-coated (galvanized) steel poultry fence fabric conforming to ASTM A390 which has 25 mm wide hexagonal mesh openings and 0.81 mm thick (20-gauge) wire and is attached to wood trusses with metal staples that are 38 mm long.
- (25) Cold-formed steel floor joists (C-shaped joists) are members with a minimum size of 41 mm (width) x 203 mm (depth) x 1.22 mm (material thickness).
- (26) The fire-resistance rating value within square brackets is achieved only where absorptive material includes spray-applied cellulose fibre with a minimum density of  $50 \text{ kg/m}^3$  and a minimum thickness of 90 mm on the underside of the subfloor, of 90 mm on the sides of the cold-formed steel floor joists, and of 13 mm on the underside of the bottom flange other than at resilient metal channel locations.

# **MMAH Supplementary Standard SB-12**

## **Energy Efficiency For Housing**

**September 2, 2014 update**

**COMMENCEMENT**

MMAH Supplementary Standard SB-12 comes into force on the 1st day of January, 2014.

- m**<sub>1</sub> Ruling of the Minister of Municipal Affairs and Housing (Minister's Ruling) MR-13-S-24 takes effect on the 1st day of January, 2014.
- r**<sub>5</sub> SB-12 as amended by Ontario Regulation 191/14 comes into force on the 1st day of January, 2015.

**EDITORIAL**

- e**<sub>2</sub> Editorial correction issued for January 1st, 2014.

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## Chapter 2

# Acceptable Solutions for Energy Efficiency Compliance Before January 1, 2017

(Applies to construction for which a permit has been applied for before January 1, 2017)

## Section 2.1. Methods for Achieving Energy Efficiency Compliance

### 2.1.1. Prescriptive Compliance Packages (See Appendix A.)

#### 2.1.1.1. Energy Efficiency

- (1) Except as permitted in Articles 2.1.1.5. to 2.1.1.10., the minimum thermal performance and energy efficiency of *building* envelope and space heating equipment, domestic hot water heating equipment and heat recovery ventilator equipment shall conform to
  - (a) Article 2.1.1.2. if the *building* is located in Zone 1 with less than 5000 heating degree days, or
  - (b) Article 2.1.1.3. if the *building* is located in Zone 2 with 5000 or more heating degree days.
- (2) All walls, ceilings, floors, windows and doors that separate heated space from unheated space, the exterior air or the exterior *soil* shall have thermal resistance ratings conforming to this Subsection.
- (3) Where specified in compliance packages in Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C, space heating equipment, domestic hot water heating equipment and heat recovery ventilators shall have the efficiency rating conforming to this Subsection. (See Appendix A.)
- (4) Insulation shall be provided between heated and unheated spaces and between heated spaces and the exterior in accordance with this Chapter.
- (5) Reflective surfaces of insulating materials shall not be considered in calculating the thermal resistance of *building* assemblies.
- (6) Where glass block is used in a wall, the required minimum overall performance of the *building* envelope shall be maintained by increasing thermal performance of other components sufficient to compensate for the additional heat loss through the glass block.
- (7) Except as provided in Sentence (8) and except as permitted in Sentences (9) and 2.1.1.10.(3), where the ratio of the gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the gross area of peripheral walls measured from grade to the top of the upper most ceiling is not more than 17%, the *building* shall comply with a compliance package selected from Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C. (See Appendix A.)

(8) Except as permitted in Sentences (9) and 2.1.1.10.(3), where the ratio of the gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the gross area of peripheral walls measured from grade to the top of the upper most ceiling is more than 17% but not more than 22%, the *building* shall comply with a compliance package selected from Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C, and the overall coefficient of heat transfer of the glazing shall be upgraded to

- (a) 1.8 where the selected compliance package requires 2.0,
- (b) 1.6 where the selected compliance package requires 1.8, and
- (c) 1.4 where the selected compliance package requires 1.6.

(See Appendix A.)

(9) Glazing in main entrance doors and adjacent sidelights to main entrance doors need not be calculated for the purposes of Sentences (7), (8) and (10).

(10) Except as provided in Sentences (9) and 2.1.1.10.(3), where the ratio of gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the gross area of peripheral walls measured from grade to the top of the upper most ceiling is more than 22%, the *building* shall comply with Subsection 2.1.2. (See Appendix A.)

(11) Where a *dwelling* unit has a walkout *basement*, the thermal performance level of the exterior *basement* wall shall be not less than that required for the above grade wall for

- (a) the *basement* wall containing the door opening, and
- (b) any *basement* wall that has an exposed wall area above the ground level exceeding 50% of that *basement* wall area.

r<sub>5</sub> (12) The minimum thermal resistance of insulation shall conform to the applicable values specified in Articles 2.1.1.2., 2.1.1.3. and 2.1.1.10.

(13) The minimum annual fuel utilization efficiency of a natural gas- or propane-fired furnace serving a *building* of *residential occupancy* shall conform to Table 2.1.1.1.A.

**Table 2.1.1.1.A.**  
**Furnace Minimum Annual Fuel Utilization Efficiency**  
 Forming Part of Sentence 2.1.1.1.(13)

Furnace Fuel Source	Minimum AFUE
Natural gas	90%
Propane	90%
Column 1	2

(14) Where space heating is supplied by a solid fuel-burning *appliance* or an earth energy system, the compliance package is permitted to comply with Tables 2.1.1.2.A. and 2.1.1.3.A.

(15) Where an enclosed unheated space is separated from a heated space by glazing, the unheated enclosure may be considered to provide a thermal resistance of RSI 0.16.

(16) Where space heating equipment and domestic hot water heating equipment efficiencies are specified in a compliance package in Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C, the equipment efficiencies shall be determined in accordance with test procedures regulated by an applicable Ontario Regulation, or in the absence of such regulation, determined in accordance with test procedures governed by the applicable equipment standard.

(17) Where heat recovery ventilators are specified in a compliance package in Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C, they shall

- (a) meet the requirements of Article 9.32.3.11. of Division B of the *Building Code*, and
- (b) meet the minimum efficiency rating required in this Chapter based on a test temperature of 0°C at an air flow rate equal to the principle exhaust flow but need not exceed 30 L/s.

- (4) Masonry walls of hollow units that penetrate the ceiling shall be sealed at or near the ceiling adjacent to the roof space to prevent air within the voids from entering the *attic or roof space* by,
- capping with masonry units without voids, or
  - installation of flashing material extending across the full width of the masonry.
- (5) Except as provided in Sentences (6) and (7), where a portion of a *basement* slab or a portion of a *basement* slab edge is the only part of the slab that is at the exterior ground level such as a walk-out *basement*, or within 600 mm of the exterior ground level, those portions shall have perimeter insulation extend not less than 600 mm below the slab level. (See Appendix A.)
- (6) Where the entire concrete slab is within 600 mm of the exterior ground level, the entire surface of the slab shall be insulated. (See Appendix A.)
- (7) Where a slab contains heating ducts, pipes, tubes or cables, the entire heated surface of the slab that is in contact with the ground shall be insulated.

### 2.1.1.7. Thermal Resistance Values for Roof Access Hatches and Eaves

- r<sub>5</sub> (1) The thermal resistance values for insulation required by Articles 2.1.1.2., 2.1.1.3. and 2.1.1.10. for exposed ceilings with attic spaces are permitted to be reduced
- directly above access hatches, and
  - near eaves to the extent made necessary by the roof slope and required ventilation clearances,
- except that the thermal insulation value at the location directly above access hatches and inner surfaces of exterior walls shall be not less than RSI 3.52.

### 2.1.1.8. Thermal Performance of Windows, Skylights and Sliding Glass Doors

- (1) Except as provided in Sentence (3) and except for sidelights to main entrance doors, windows, skylights and sliding glass doors shall meet
- the required overall coefficient of heat transfer in Tables 2.1.1.2.A, 2.1.1.2.B and 2.1.1.2.C and Tables 2.1.1.3.A, 2.1.1.3.B and 2.1.1.3.C and Table 2.1.1.10., or
  - the corresponding energy rating in Table 2.1.1.8.

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**Table 2.1.1.8.**  
**Maximum U-Values and Minimum Energy Ratings (ER) for Windows, Skylights and Sliding Glass Doors**  
 Forming Part of Sentence 2.1.1.8.(1)

Component	Maximum U-Values	Minimum Energy Ratings, (ER)
	U-Value, W/m <sup>2</sup> • K (Btu/h • ft <sup>2</sup> • °F)	ER
Skylights	2.8 (0.50)	—
Windows and Sliding Glass Doors	2.0 (0.35)	17
	1.8 (0.32)	21
	1.6 (0.28)	25
	1.4 (0.25)	29
Column 1	2	3

- (2) The energy rating and the overall coefficient of heat transfer required for windows and sliding glass doors in a *residential occupancy* shall be determined in conformance with
  - (a) CAN/CSA-A440.2, “Fenestration Energy Performance”, or
  - (b) NFRC 100, “Procedure for Determining Fenestration Product U-factors” and NFRC 200, “Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence”.
- (3) A *basement* window that incorporates a *loadbearing* structural frame shall be double glazed with a low-E coating.

#### 2.1.1.9. Minimum Thermal Resistance of Doors

- (1) Except for doors in enclosed unheated vestibules and cold cellars, and except for glazed portions of doors, all doors that separate heated space from unheated space shall have a thermal resistance of not less than RSI 0.7 where a storm door is not provided.

#### 2.1.1.10. Additions to Existing Buildings

- r<sub>5</sub>
- (1) Except as provided in Sentences (2) and (3), an addition to an existing *building* shall be designed to this Subsection and comply with the applicable requirements of
    - (a) the Tables referenced in Article 2.1.1.2. or 2.1.1.3. , or
    - (b) Table 2.1.1.10. in lieu of the Tables referenced in Sentences 2.1.1.1.(7) and (8).  
(See Appendix A.)
  - (2) For the purpose of Sentences 2.1.1.1.(7) to (10) and Subsection 2.1.2., the addition may be considered independently or in combination with the existing *building*, regardless of the thermal characteristics of the existing *building* envelope.  
(See Appendix A.)
  - (3) A *one-storey* sunroom addition to an existing *building* shall be deemed to be in compliance with Articles 2.1.1.2. and 2.1.1.3. and Subsection 2.1.2., provided that the overall coefficient of heat transfer of
    - (a) doors, windows and walls has a maximum U-Value of
      - (i) 1.6 if the *building* is located in Zone 1 with less than 5000 heating degree days,
      - (ii) 1.4 if the *building* is located in Zone 2 with 5000 or more heating degree days, or
      - (iii) 1.4 if the *building* uses *electric space heating*, and
    - (b) roofs and skylights has a maximum U-Value of 2.6.  
(See Appendix A.)



(7) For the purpose of calculations required in Clause (3)(b), the *building* shall have identical dimensions and orientation as the proposed design, except where the glazing to wall ratio exceeds 22%, the glazing area shall be reduced proportionally along each exposure until the limit is met.

(8) For the purpose of calculations required in Clause (3)(b), where frame construction is used, the design of the framing system shall assume a spacing of

- (a) 406 mm o.c. for wall studs,
- (b) 406 mm o.c. for exposed floors joists, roof joists and roof rafters, and
- (c) 610 mm o.c. for roof trusses.

(9) For the purpose of calculations required in Clause (3)(b), *building* envelope component properties and characteristics not specifically described in this Subsection and Subsection 2.1.1. shall be modeled the same for both the proposed design and a design based on a permitted compliance package unless it can be shown such properties and characteristics of the proposed design constitute additional energy conservation measures.

(10) Where the overall thermal performance of the proposed *building* envelope is less than the envelope performance of the compliance package that is compared against it, the reduction in the performance level of the *building* envelope shall not be more than 25%.

### **2.1.3. Other Acceptable Compliance Methods**

#### **2.1.3.1. Other Acceptable Compliance Methods** (See Appendix A.)

(1) A *building* shall be deemed to be in compliance with the requirements of Subsection 2.1.1. provided that the building is in compliance with the technical requirements of NRCan, "Energy Star for New Homes: Technical Specifications - Ontario".

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**Commentary:** Chapter 3 sets out options that could be used to achieve compliance with the energy efficiency requirements in Article 12.2.1.2. of Division B of the Building Code (O. Reg. 332/12) in relation to construction for which a permit is applied for after December 31, 2016. As with past Building Code energy efficiency requirements, the Ministry will continue to review available energy efficiency options, and changes may be made or additional options may be included prior to December 31, 2016.

## Chapter 3

# Acceptable Solutions for Energy Efficiency Compliance After December 31, 2016

(Applies to construction for which a permit has been applied for after December 31, 2016)

## Section 3.1. Methods for Achieving Energy Efficiency Compliance

### 3.1.1. Prescriptive Compliance Packages (See Appendix A.)

#### 3.1.1.1. Energy Efficiency

(1) Except as permitted in Articles 3.1.1.5. to 3.1.1.10., the minimum thermal performance and energy efficiency of *building* envelope and space heating equipment, domestic hot water heating equipment and heat recovery ventilators equipment shall conform to

- (a) Article 3.1.1.2. if the *building* is located in Zone 1 with less than 5000 heating degree days, or
- (b) Article 3.1.1.3. if the *building* is located in Zone 2 with 5000 or more heating degree days.

(2) All walls, ceilings, floors, windows and doors that separate heated space from unheated space, the exterior air or the exterior *soil* shall have thermal resistance ratings conforming to this Subsection.

(3) Where specified in compliance packages in Tables 3.1.1.2.A and 3.1.1.2.BC and Tables 3.1.1.3.A and 3.1.1.3.BC, space heating equipment, domestic hot water heating equipment and heat recovery ventilators shall have the efficiency rating conforming to this Subsection. (See Appendix A.)

(4) Insulation shall be provided between heated and unheated spaces and between heated spaces and the exterior in accordance with this Chapter.

(5) Reflective surfaces of insulating materials shall not be considered in calculating the thermal resistance of building assemblies.

(6) Where glass block is used in a wall, the required minimum overall performance of the *building* envelope shall be maintained by increasing thermal performance of other components sufficient to compensate for the additional heat loss through the glass block.

(7) Except as provided in Sentence (8) and except as permitted in Sentences (9) and 3.1.1.10.(3), where the ratio of the gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the gross area of peripheral walls measured from grade to the top of the upper most ceiling is not more than 17%, the *building* shall comply with a compliance package selected from Tables 3.1.1.2.A and 3.1.1.2.BC and Tables 3.1.1.3.A and 3.1.1.3.BC. (See Appendix A.)

(8) Except as permitted in Sentences (9) and 3.1.1.10.(3), where the ratio of the gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the gross area of peripheral walls measured from grade to the top of the upper most ceiling is more than 17% but not more than 22%, the *building* shall comply with a compliance package selected from Tables 3.1.1.2.A and 3.1.1.2.BC and Tables 3.1.1.3.A and 3.1.1.3.BC, and the overall coefficient of heat transfer of the glazing shall be upgraded to

- (a) 1.8 where the selected compliance package requires 2.0,
- (b) 1.6 where the selected compliance package requires 1.8,
- (c) 1.4 where the selected compliance package requires 1.6, and
- (d) 1.2 where the selected compliance package requires 1.4.

(See Appendix A.)

(9) Glazing in main entrance doors and adjacent sidelights to main entrance doors need not be calculated for the purposes of Sentences (7), (8) and (10).

(10) Except as provided in Sentence (9), where the ratio of gross area of windows, sidelights, skylights, glazing in doors and sliding glass doors to the gross area of peripheral walls measured from grade to the top of the upper most ceiling is more than 22%, the *building* shall comply with Subsection 3.1.2. (See Appendix A.)

(11) Where a *dwelling unit* has a walkout *basement*, the thermal performance level of the exterior *basement* wall shall be not less than that required for the above grade wall for

- (a) the *basement* wall containing the door opening, and
- (b) any *basement* wall that has an exposed wall area above the ground level exceeding 50% of that basement wall area.

(12) The minimum thermal resistance of insulation shall conform to the applicable values specified in Articles 3.1.1.2. and 3.1.1.3.

(13) Every *dwelling unit* that is within the scope of Part 9 and is intended for occupancy on a continuing basis during the winter months shall be equipped with a heat recovery ventilator.

(14) Where space heating is supplied by a solid fuel-burning *appliance* or an earth energy system, the compliance package is permitted to comply with Tables 3.1.1.2.A. and 3.1.1.3.A.

(15) Where an enclosed unheated space is separated from a heated space by glazing, the unheated enclosure may be considered to provide a thermal resistance of RSI 0.16.

(16) Where space heating equipment and domestic hot water heating equipment efficiencies are specified in a compliance package in Tables 3.1.1.2.A and 3.1.1.2.BC and Tables 3.1.1.3.A and 3.1.1.3.BC, the equipment efficiencies shall be determined in accordance with test procedures regulated by an applicable Ontario Regulation, or in the absence of such regulation, determined in accordance with test procedures governed by the applicable equipment standard.

(17) Where heat recovery ventilators are specified in a compliance package in Tables 3.1.1.2.A and 3.1.1.2.BC and Tables 3.1.1.3.A and 3.1.1.3.BC, they shall

- (a) meet the requirements of Article 9.32.3.11. of Division B of the *Building Code*, and
- (b) meet the minimum efficiency rating required in this Chapter based on a test temperature of 0°C at an air flow rate equal to the principle exhaust flow but need not exceed 30 L/s.

### 3.1.1.2. Energy Efficiency for Buildings Located in Zone 1

(1) Except as required in Sentences (2) and (3) and permitted in Sentence (4), the minimum thermal performance of *building* envelope and equipment shall conform to Table 3.1.1.2.A.

**Table 3.1.1.2.A**  
**ZONE 1 - Compliance Packages for Space Heating Equipment with AFUE ≥ 90%**  
 Forming Part of Sentence 3.1.1.2.(1)

Component	Compliance Package				
	A	B	C	D	E
Ceiling with Attic Space Minimum RSI (R)-Value <sup>(1)</sup>	10.56 (R60)	10.56 (R60)	10.56 (R60)	10.56 (R60)	10.56 (R60)
Ceiling Without Attic Space Minimum RSI (R)-Value <sup>(1)</sup>	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)
Exposed Floor Minimum RSI (R)-Value <sup>(1)</sup>	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)	5.46 (R31)
Walls Above Grade Minimum RSI (R)-Value <sup>(1)</sup>	3.34 + 1.32 ci (R19 + R7.5 ci)	3.87 (R22)	3.34 + 0.88 ci (R19 + R5 ci)	4.22 (R24)	3.34 + 0.88 ci (R19 + R5 ci)
<i>Basement Walls</i> Minimum RSI (R)-Value <sup>(1)</sup>	3.52 + 1.40 ci (R20 + R8 ci)	3.52 (R20)	3.52 + 1.40 ci (R20 + R8 ci)	3.52 + 1.40 ci (R20 + R8 ci)	3.52 (R20)
Below Grade Slab Entire Surface > 600 mm Below Grade Minimum RSI (R)-Value <sup>(1)</sup>	—	—	—	—	—
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value <sup>(1)</sup>	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)
Heated Slab or Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value <sup>(1)</sup>	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)	1.76 (R10)
Windows and Sliding Glass Doors Maximum U-Value <sup>(2)</sup>	1.6	1.8	1.6	1.6	1.6
Skylights Maximum U-Value <sup>(2)</sup>	2.8	2.8	2.8	2.8	2.8
Space Heating Equipment Minimum AFUE	90%	96%	94%	96%	92%
HRV Minimum Efficiency	55%	75%	75%	75%	60%
Domestic Hot Water Heater Minimum EF	0.67	0.83	0.67	0.67	0.83
Column 1	2	3	4	5	6

**Notes to Table 3.1.1.2.A:**

The following definitions apply: ci = continuous insulation

- (1) The values listed are minimum RSI-Values for the thermal insulation component only. RSI-Values are expressed in (m<sup>2</sup> • K)/W.  
 (2) U-Value is the overall coefficient of heat transfer for a window assembly, sliding glass door assembly or skylight assembly expressed in W/(m<sup>2</sup> • K). See exceptions and use of alternative Energy Ratings (ER) in Article 3.1.1.8.

**A-2.1.1.10.(3) Sunroom Additions to Existing Houses.**

A sunroom addition to an existing house referred in this Sentence applies to a one-storey structure built substantially with wall/roof fenestration and glass doors but which sometimes contain unglazed low wall panels that support wall glazing above it. Since the glazing percentage of sunrooms exceeds the limits permitted for compliance packages in Articles 2.1.1.2. and 2.1.1.3. and performance compliance methods may not be possible, these sunrooms are exempt from compliance package requirements, provided that the thermal performance of the glazing is enhanced further than what is required for non-sunroom additions.

The maximum U-Values for doors, sliding glass doors, wall glazing and supporting wall panels for sunroom additions in Clause 2.1.1.10.(3)(a) have been derived from the maximum U-Values for window and sliding glass doors in additions to existing buildings in Table 2.1.1.10. and then upgraded in accordance with Sentence 2.1.1.1.(8).

The maximum U-Value of 2.6 for roofs and skylights for sunroom additions in Clause 2.1.1.10.(3)(b) has been derived from upgrading the maximum U-Value of 2.8 for skylights in additions to existing buildings in Table 2.1.1.10. consistent with the methodology used in Sentence 2.1.1.1.(8).

**r<sub>5</sub> A-2.1.1.11.(4)(a) Drain Water Heat Recovery Units for Showers.**

For the purpose of the prescriptive trade off provisions in Subsection 2.1.1., the term “all showers” includes the case where there is only one shower in a dwelling unit. If there is only one shower, that shower is required to be connected to a drain water heat recovery unit. Where there are two or more showers, drain water from at least two showers are required to be connected to a single drain water heat recovery unit or to two individual drain water heat recovery units.

**A-2.1.2.1. Application of Performance Compliance Path.**

This Article requires two annual energy use simulations. These simulations compare the simulated annual energy use of the proposed building with the simulated annual energy use of an applicable compliance package. The simulated annual energy use of the proposed building cannot exceed the simulated annual energy use of an applicable compliance package.

Where a performance compliance path is selected, it is the intent of Sentence 2.1.2.1.(2) that the performance level of the compliance package takes into account the requirements listed in Subsection 2.1.1. that are applicable to that compliance package. Similarly, the annual energy use calculation for a compliance package referenced in Clause 2.1.2.1.(3)(b) shall take into account the requirements listed in Subsection 2.1.1. that are applicable to that compliance package.

For the purpose of calculating the annual energy use of a proposed design and a design based on a selected compliance package, the following software may be used:

- HOT2000 version 9.34c or newer versions
- other software referenced by the Energuide Rating System
- RESNET accredited Home Energy Rating System (HERS) software, such as:
  - OptiMiser
  - EnergyGauge
  - EnergyInsights
  - REM/Rate

**A-2.1.3.1. Other Acceptable Compliance Methods.**

Compliance with the technical requirements of the Energy Star Program may be achieved using either the prescriptive path or the performance path required by NRCAN, “Energy Star for New Homes: Technical Specifications – Ontario”.

Clause 2.1.1.1 of NRCAN, “Energy Star for New Homes: Technical Specifications – Ontario” allows the designer to use an NRCAN-approved compliance option described in NRCAN, “Energy Star for New Homes: Compliance Options” (Ontario).

Only the technical provisions contained in NRCAN, “Energy Star for New Homes: Technical Specifications – Ontario” and other Energy Star documents it references are mandatory under this Supplementary Standard. However, in addition to the technical requirements, the administrative requirements of the Energy Star documents may be used to demonstrate compliance with Sentence 2.1.3.1.(1) by obtaining an Energy Star label for the building.

## Chapter 3: Acceptable Solutions for Achieving Energy Efficiency Compliance After December 31, 2016.

### A-3.1.1. Compliance Packages.

Individual components of compliance packages found in Tables 3.1.1.2.A and, 3.1.1.2.BC and Tables 3.1.1.3.A and 3.1.1.3.BC are not permitted to be mixed with similar components of other compliance packages either found within the same Table or similar components of compliance packages found in other Tables.

#### A-3.1.1.1.(3) Mechanical Equipment.

Compliance package tables referred to in this Sentence contain energy efficiency requirements for some or all mechanical equipment. Where a compliance package includes an energy efficiency level for space heating equipment, domestic hot water heater or heat recovery ventilator, conformance with the package can only be achieved if the building is equipped with the mechanical equipment specified in the compliance package.

#### A-3.1.1.1.(7), (8) and (10) Fenestration to Wall Ratio.

When the fenestration to wall ratio is calculated, all fenestration areas and the entire peripheral wall above grade is included. The peripheral wall area includes floor rim board areas and all above grade wall areas. It is essentially the sum of the above grade walls that separate conditioned spaces from unconditioned spaces, and adjacent units. In the case of an attached garage, the walls that are common with the house and the garage are also included in the wall area calculations. For attached homes, the above grade portions of the walls that are common to other conditioned units are also included in the wall area. The fenestration area is based on the rough structural opening provided for windows, skylights, sliding glass doors, and for glazed portions in doors. For A-frame structures with steeply inclined roofs that also act as walls, the roof portion that serves as the interior wall area can be considered as the wall area in calculating the fenestration to wall ratio.

#### A-3.1.1.6.(1) Permitted Basement Insulation Gap.

The provision refers to the gap between basement insulation and the floor level that might be left at the bottom of a foundation wall. Insulation can be extended from the underside of the subfloor to the floor level of the basement, or a gap may be left provided that the gap is not more than 200 mm when measured from floor level to where the insulation is terminated.

#### A-3.1.1.6.(5) and (6) Slab Insulation.

Except where specifically required in a compliance package, the entire surface of the slab is only required to be insulated when the entire concrete slab is completely within 600 mm of the exterior ground level. A typical example would be a slab on ground construction without a basement. If a slab is partially at the exterior ground level (i.e. a walkout basement) or partially within 600 mm of the exterior surface, then only those parts are required to be insulated with perimeter insulation.

Where a slab of a house is completely or partially within 600 mm of the exterior ground level, either the entire surface of the slab or the perimeter of the slab is required to be insulated but not at both locations.

#### A-3.1.1.10.(1) Additions to Existing Houses.

In Clause 3.1.1.10.(1)(a), the design and construction of an addition to an existing house can conform to the minimum building envelope and mechanical equipment requirements where an applicable compliance package is selected from Article 3.1.1.2. or 3.1.1.3.

Alternatively, Clause 3.1.1.10.(1)(b) provides a simpler approach and permits an addition to an existing building to comply with the appropriate column in Table 3.1.1.10. since the design and construction of an existing building is unlikely to be determined and matched against an applicable compliance package from Article 3.1.1.2. or 3.1.1.3. However, the addition is required to comply with Sentences 3.1.1.1.(7) to (10). Glazing upgrade of the addition is required if it falls within the scope of Sentence 3.1.1.1.(8). Table 3.1.1.10. further exempts both an addition and an existing building from conforming to minimum efficiency requirements for HRV's, domestic hot water heaters and space heating equipment required in Article 3.1.1.2. or 3.1.1.3. This would permit existing mechanical equipment to serve the entire building provided that it has the necessary capacity.