

Section 9.7. Windows, Doors and Skylights

(See Note A-9.7. and Note A-9.7.4.)

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) entrance doors to *dwelling units*.
- 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 but does not include vehicular access 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.

9.7.2.2. Reserved

9.7.3. Performance of Windows, Doors and Skylights

9.7.3.1. General

- 1) Skylights and their components shall be designed, constructed and installed so that they resist snow loads.
- 2) Reserved.
- 3) Reserved.
- 4) Reserved.
- 5) Reserved.

9.7.3.2. Heat Transfer Performance

- 1) Windows, doors and skylights and their components described in Sentence 9.7.1.1.(1) shall be designed, constructed and installed to
 - a) minimize surface condensation on the warm side of the component (See Note A-9.7.3.2.(1)(a)), and
 - b) ensure comfortable conditions for occupants.
- 2) Compliance with the heat transfer performance requirements described in Sentence (1) shall be demonstrated by
 - a) complying with the requirements in Article 9.7.3.3., or
 - b) design and construction conforming to Part 5.
- 3) Windows, doors and skylights shall conform to the energy efficiency requirements of Part 10.

9.7.3.3. Thermal Characteristics of Windows, Doors and Skylights

- 1) Except as permitted in Sentence (2), metal frames and sash of windows, doors and skylights shall incorporate a thermal break.
- 2) Windows and doors described in Sentence (1) do not require a thermal break where they

- a) **reserved**,
- b) are installed as storm windows and doors, or
- c) are required to have a *fire-protection rating*.

3) Reserved.

4) Windows, doors and skylights with or without storm doors or sash that are installed in portions of *buildings* where the intended use of the interior space will result in high moisture generation shall be designed in conformance with Section 5.3. (See Note A-9.25.5.2.)

9.7.4. Design and Construction

9.7.4.1. General

1) Except as provided by Sentence (2), windows, doors, skylights and their components shall be designed and constructed in accordance with

- a) Article 9.7.4.2., or
- b) Part 5.

2) Windows, doors, skylights and their components that are required to have a *fire-protection rating* need not conform to this Subsection.

9.7.4.2. Standards

1) Except as permitted by Sentence (2) and Article 9.7.4.3., windows, doors and skylights and their components shall conform to

- a) AAMA/WDMA/CSA 101/I.S.2/A440, “NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights” (Harmonized Standard), 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”.

(See Note A-9.7.4.2.(1).)

2) A door designated as a “Limited Water” door in accordance with the standard referenced in Clause (1)(a) shall not be used unless the door

- a) separates a *dwelling unit* from an unconditioned *storage garage* or a carport,
- b) conforms to Clauses 3.3.1.13.(1)(a), (b) and (c) and Sentences 3.3.1.13.(5) and (10), or
- c) is not required by Sentence 9.27.3.8.(3) to have flashing installed.

9.7.4.3. Performance Requirements

1) For the purposes of compliance with the standard referenced in Clause 9.7.4.2.(1)(b), windows, doors and their components in a *building* of no more than 10 m in height, measured from *grade*, may conform to the design pressure, performance grade and water resistance values in Table C-5 of Appendix C instead of the values calculated in the 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) For *buildings* described in Sentence 1.3.3.3.(1) of Division A, where design pressure, performance grade and water resistance values are calculated in accordance with the standard referenced in Clause 9.7.4.2.(1)(b), the driving rain wind pressure (DRWP) values in Table A.1 of CSA A440S1, “Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights,” shall be used.

(See Note A-9.7.4.3.(2).)

3) Reserved.

4) Reserved.

9.7.5. Resistance to Forced Entry

9.7.5.1. Resistance to Forced Entry for Sliding Doors

- 1) This Article applies to sliding doors serving *dwelling units*, other than exterior doors to garages and to other ancillary spaces.
- 2) Sliding doors shall not permit the removal of the sliding panel when in the locked position.
- 3) Exterior doors shall
 - a) have a pin type locking mechanism, with a minimum 9 mm throw into the frame, or an equivalent locking mechanism, operable from the interior without the use of keys, special devices or specialized knowledge of the locking mechanism, or
 - b) conform to at least Grade 10 in ASTM F 842, “Standard Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing Impact.”

9.7.5.2. Resistance to Forced Entry for Swinging Doors

- 1) Except for exterior doors to ancillary spaces other than garages, this Article applies to
 - a) swinging entrance doors to *dwelling units*,
 - b) swinging doors between *dwelling units* and attached garages or other ancillary spaces,
 - c) swinging doors that provide access directly or indirectly from a *storage garage* to a *dwelling unit*, and
 - d) swinging entrance doors to detached storage garages.

(See Note A-9.7.5.2.(1).)

- 2) Doors, frames and hardware that conform to AAMA 1304, “Voluntary Specification for Forced Entry Resistance of Side-Hinged Door Systems,” are not required to conform to Sentences (3) to (7).

(See Note A-9.7.5.2.(2).)

- 3) Where doors as described in Sentence (1) are constructed of wood, they shall
 - a) be solid core or stile-and-rail type,
 - b) be not less than 45 mm thick, and
 - c) if of the stile-and-rail type, have a panel thickness of not less than 19 mm, with a total panel area not more than half of the door area.
- 4) Doors described in Sentence (1) shall be provided with
 - a) a deadbolt lock with a cylinder having no fewer than 5 pins, and
 - b) a bolt throw not less than 25 mm long, protected with a solid or hardened free-turning ring or beveled cylinder housing.

(See Article 9.9.6.7.)

- 5) An inactive leaf in double doors used in locations specified in Sentence (1) shall be provided with heavy-duty bolts top and bottom having an engagement of not less than 15 mm.

- 6) Hinges for doors described in Sentence (1) shall be fastened
 - a) to wood doors with wood screws not less than 25 mm long and to wood frames with wood screws so that at least 2 screws per hinge penetrate not less than 30 mm into solid wood, or
 - b) to metal doors and metal frames with machine screws not smaller than No. 10 and not less than 10 mm long.

(See Note A-9.7.5.2.(6).)

- 7) Strikeplates for deadbolts described in Sentence (4) shall be fastened
 - a) to wood frames with wood screws that penetrate not less than 30 mm into solid wood, or
 - b) to metal frames with machine screws not smaller than No. 8 and not less than 10 mm long.

(See Note A-9.7.5.2.(6).)

- 8) Except for storm or screen doors, doors described in Sentence (1) that swing outward shall be provided with hinges or pins so that the doors cannot be removed when they are in the closed position.

(See Note A-9.7.5.2.(8).)

9) Solid blocking shall be provided on both sides at the lock height between the jambs for doors described in Sentence (1) and the structural framing so that the jambs will resist spreading by force.

10) Except as permitted by Sentences (11) and (12), a door frame reinforcement plate shall be installed between the jack stud and door frame, and shall be:

- a) constructed of minimum 18 gauge steel plate;
- b) provided with an integral metal tongue that is:
 - i) at right angles to the plate located and designed so as to resist the inwards movement of the door when the deadbolt is engaged, and
 - ii) inset into the door frame to a minimum 15.9 mm depth; and
- c) screwed into the door frame or adjacent jack stud with wood screws that are:
 - i) are not smaller than No. 10,
 - ii) penetrate at least 50 mm into wood studs,
 - iii) have at least two points of attachment on each side of the deadbolt, and
 - iv) are located at least 38 mm away from the deadbolt throw.

(See Notes A-9.7.5.2.(10) and (11).)

11) Except as permitted by Sentence (12), strikeplates required by Clause 9.7.5.2.(7)(a) and installed in a wood door frame without the reinforcement plate of Sentence (10), shall be:

- a) constructed from minimum 18 gauge steel plate;
- b) provided with an integral door reinforcement by means of a minimum 13 mm long metal tongue inset into the frame at right angles to the strike plate and arranged so as to resist forced entry when the deadbolt is engaged; and
- c) attached to the door frame by means of wood screws penetrating at least 30 mm into the wood at least two points of attachment on each side of the deadbolt, at least 38 mm away from the deadbolt throw.

(See Note A-9.7.5.2.(10) and (11).)

12) A door provided with a multi-point locking system is not required to comply with Sentences (10) or (11).

9.7.5.3. Resistance to Forced Entry for Windows

1) In *dwelling units*, windows, any part of which is located within 2 m of adjacent ground level, shall conform to the requirements for resistance to forced entry as described in Clause 5.3.5 of AAMA/WDMA/CSA 101/I.S.2/A440, “NAFS – North American Fenestration Standard/Specification for Windows, Doors, and Skylights.”

(See Note A-9.7.5.3.(1).)

9.7.5.4. Resistance to Forced Entry for Skylights

- 1) All openable skylights shall be designed to prevent opening from the outside when in the closed and locked position.
- 2) All exterior skylight fasteners shall be tamperproof.

9.7.6. Installation

9.7.6.1. Installation of Windows, Doors and Skylights

1) Except as provided by Sentence (2), the installation of manufactured and pre-assembled windows, doors and skylights and the field assembly of manufactured window and door combination units shall conform to the instructions, if any, provided by the manufacturer.

2) In case of conflict between the provisions of this By-law and instructions referred to in Sentence (1), the provisions of this By-law shall govern.

3) Windows, doors and skylights shall be sealed to air barriers.

9.7.6.2. Sealants, Trim and Flashing

- 1) The sealing compound used to seal the glass component of an insulating glazing unit to the sash component shall be compatible with the sealing compound used to edge seal the glass component.
- 2) Flashing used to protect openings shall conform to Articles 9.27.3.7. and 9.27.3.8.
- 3) Sealants shall be applied between window frames or trim and the exterior cladding or masonry in conformance with Subsection 9.27.4.
- 4) All unfinished portions of the frame and other components of aluminum windows, doors or skylights in contact with the edges of masonry, concrete, stucco or plaster shall be protected with an alkali-resistant coating.