

RB14-041

FLOORS CONNECTED BY STAIRS NOT FORMING REQUIRED EXITS

Reference: Sentence 3.1.8.6.(2), Sentence 3.2.8.1.(1), Clause 3.2.8.2.(6)(a), Sentences 3.3.1.19.(3 and 5), Article 9.6.1.4., Sentence 9.6.1.2.(1), Standata 06-BCV-009, NFPA 105, NFPA 80 and UL 1784

Sentence 3.1.8.6.(2) “The size of an opening in an interior fire separation required to be protected with a closure shall be not more than 22 m², with no dimension more than 6 m, provided the fire compartments on both sides of the fire separation are sprinklered.”

Sentence 3.2.8.1.(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 3.2.8.9.”

Clause 3.2.8.2.(6)(a) “An interconnected floor space need not conform to the requirements of Articles 3.2.8.3. to 3.2.8.9. provided

- a) the interconnected floor space consists of the first storey and the storey next above or below it, but not both.”

Sentence 3.3.1.19.(3) “Except as permitted by Sentence (4), transparent panels used in an access to exit that, because of their physical configuration or design, could be mistaken as a means of egress shall be made inaccessible by barriers or railings.”

Sentence 3.3.1.19.(5) “Glass in doors and in sidelights that could be mistaken for doors, within or at the entrances to dwelling units and in public areas, shall conform to the requirements of Article 9.6.1.4.”

Regulation Bulletin General Policy Statement

Unless stated otherwise, the Code references in this Regulations Bulletin are to Division B of the Alberta Building Code 2014 (ABC2014). Regulation Bulletins are City of Calgary clarifications and do not overrule the ABC 2014 nor constitute a relaxation of the Code. They serve to clarify the Code in areas where the latter is ambiguous or does not cover a specific topic. Regulation Bulletins should always be read in the context of the appropriate requirements of the Code. Regulation Bulletins should always be read in the context of the appropriate requirements of the Code.

Article 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
 - a) safety glass of the tempered or laminated type conforming to CAN/CGSB-12.1-M, “Tempered or Laminated Safety Glass,” or
 - b) 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 m² 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.

Sentence 9.6.1.2.(1) “1) Glass shall conform to

- a) CAN/CGSB-12.1-M, “Tempered or Laminated Safety Glass,”
- b) CAN/CGSB-12.2-M, “Flat, Clear Sheet Glass,”
- c) CAN/CGSB-12.3-M, “Flat, Clear Float Glass,”
- d) CAN/CGSB-12.4-M, “Heat Absorbing Glass,”
- e) CAN/CGSB-12.8, “Insulating Glass Units,”
- f) CAN/CGSB-12.10-M, “Glass, Light and Heat Reflecting,”
- g) CAN/CGSB-12.11-M, “Wired Safety Glass,” or
- h) ASTM E 2190, “Insulating Glass Unit Performance and Evaluation.”

Standata 06-BCV-009 “Sprinkler Protected Glazing in Fire-Resistant Wall Assemblies”

NFPA 105 “Recommended Practice for the Installation of Smoke-Control Door Assemblies, 1999 Edition”

NFPA 80 “Standard for Fire Doors and Fire Windows, 1999 Edition”

UL 1784 “Air Leakage Tests of Door Assemblies”

Question:

Quite often tenants occupying more than one floor of a multi-storey building wish to interconnect their floors by convenience stairs for access purposes. These stairs do not form part of the building exiting system.

When a designer wishes to construct a convenience stair in any building where the stair is connecting anything but the first storey to the one above or below it, the interconnection must be protected in accordance with the requirements of Article 3.2.8.3. to Article 3.2.8.9.

This Regulation Bulletin gives guidelines for the protection of the floor and wall openings created by convenience stairs in multistorey buildings that connect floors above the second storey or connect more than one storey to the first storey.

Commentary | Relevant Facts | Conclusions:

Convenience stairs not forming part of a required exit stair system are permitted between floors provided the following conditions in one of the two following options are satisfied.

OPTION 1:

The stair may connect more than two floors of a building providing:

- a) It is separated from each floor area it serves using the same requirements as for an exit separation in Subsection 3.4.4, and:
 - i) A glass partition may be utilized for the fire separation if it complies with the requirements of Standata 06-BCV-009 (i.e. sprinkler protected glazing). At the time of writing this Regs Bulletin, there appears to be only one system that complies with the Standata (i.e. only one system has been evaluated to conform with ULC/ORD C263.1). The Underwriter's Laboratories (UL) listing for this particular system specifies that 'Combustibles must be maintained at a minimum distance of 51mm from the window. This may be accomplished by use of a 1m (3ft) pony wall or any other method...' Methods other than a pony wall will be deemed acceptable if the entire assembly is evaluated by a testing agency that has been accredited by the Standards Council of Canada for conformance to ULC/ORD C263.1, as permitted in Standata 06-BCV-009.

If other sprinkler protected glazing systems are listed in the future, those systems will also be considered acceptable if they comply with Standata 06-BCV-009 and their installation complies with the listings.
 - ii)) A swinging door with the appropriate fire protection rating may be used as a closure in a glazed fire separation protected by sprinklers.
 - iii) A swinging door may be equipped with a hold-open device complying with Article 3.1.8.12.
 - iv) The combined area and individual dimensions of all of the closures (i.e. doors) installed within the convenience stair shaft must comply with 3.1.8.6.(2).

b) No access to exit is permitted to pass through the stair enclosure.

c) The size of the floor opening may not be larger than the plan area of the stair plus a maximum of 10m²

d) No occupancy is permitted within the stair enclosure.

e) The building must be sprinklered.

f) The building is classified as Group A, Division 1, 2 or 3, Group D or Group E major occupancy.

g) If any level of the stair connects a floor level that is part of an interconnected floor space, the opening at the level(s) must be treated in accordance with the requirements for interconnected floor spaces.

h) If a sprinkler protected glazing assembly is used, the design must comply with 3.3.1.19. Where the elements described in 3.3.1.19. are installed to indicate the position of the glass, they must comply with the installation instructions for the sprinkler protected glazing assembly (i.e. the fixtures must not restrict water flow over the surface of the glass, if this is a requirement of the listing for the assembly).

OPTION 2:

The stair may connect not more than two floors of the building providing it complies with all requirements in Option 1 above except that:

- a) Only one of the two storeys is open to the floor opening space,
- b) The remaining storey is separated from the space by a fire separation having a fire-resistance rating equivalent to the fire resistance rating of the floor plate penetrated,
- c) If any opening in the fire separation is protected with a rolling steel door, the door must provide the appropriate fire protection rating, and must be installed in accordance with NFPA 105. NFPA 105 requires that the door be tested for smoke penetration to the equivalent of UL 1784 “Air Leakage Tests of Door Assemblies”. At time of printing, UL listed products tested to this standard can be found by searching UL Category Code ‘OPBW’ or Keyword ‘Leakage Rated Door Assemblies’ on the UL website (www.ul.com). The UL-listed product selected must have an allowable air leakage not more than 3 scfm / sq.ft. door opening, in accordance with NFPA 105, Table 3-2.1 “Allowable Air Leakage”.

The rolling steel door must also be activated by smoke detectors located as required by NFPA 80. If there is no ceiling on the floor opening side of the closure then the smoke detector must be on the ceiling of the floor opening space above.

Chief Building Inspector