



Public Review

Vancouver Building By-law (VBBL)

Proposed change to Fire Fighter Path of Travel

Topic: Extended path of travel for fire fighters

Code change number: 24-0006

Code reference: Book I, Division B, Sentence 3.2.5.5.(3); Sentence 9.10.20.3.(8)

Description of the proposed change

Revision of Firefighters' extended path of travel requirements to reduce confusion in application and facilitate sprinkler design.

Justification

The mechanisms in Sentences 3.2.5.5.(3) and 9.10.20.3.(8) which require the upgrading of the sprinkler design standard from NFPA 13D to NFPA 13R, or from NFPA 13R to NFPA 13, have proven to be challenging for sprinkler designers due to a variety of factors. This creates a significant barrier to construction and for sprinkler installations.

This proposal is to remove the sprinkler standard upgrade mechanism, which is confusing and difficult to achieve for industry. Instead, it is proposed that a simpler additional sprinkler discharge density be provided to the hydraulic calculation to account for potential fire growth due to any potential increase in VFRS response time due to increased travel and set-up time. Statistics by NFPA have shown that in most fires within appropriately sprinklered single dwelling units, only a single sprinkler head will activate. The additional design density will provide additional suppressive power or to permit an additional sprinkler head to operate to compensate for delays in fire department response due to the extended travel distance.

This proposal also seeks to address the issue of water service size, since upgrades to the sprinklers standard have generally been associated with greater water demand, which could exceed the typical expected size (1-1/2") of a low-density detach home water supply. Design previously stepping up from NFPA 13D to 13R, or even to NFPA 13 would require progressively large amounts of flowing sprinklers which often pushed a design from a conventional residential water supply to a commercial water supply. This is both initially expensive to provide, and costly to maintain, and is not favoured by City Engineering as it provides a potentially less precise

flow/quantity measurement for small water flows (domestic typically), which could lead to under billing for water, and/or wasted water.

OS1.3 provision removed from unique to Vancouver 9.10.20.3.(5) & (6) provision to address multiplex designs, and for consistency with Part 3 objectives.

Proposed VBBL content

Legend

Black Text – 2019 Vancouver Building By-law content

Underlined Black Text – Proposed modification to Vancouver Building By-law content

3.2.5.5. Location of Access Routes and Paths of Travel

1) Except as provided by Sentences (2) and (3), Access routes required by Article 3.2.5.4. shall be located so that

a) the principal entrance is no less than 3 m and no more than 15 m from the closest portion of the access route, measured horizontally along the path of travel from the access route to the principal entrance (see Note A-3.2.5.5.(2)(a).), and

b) 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*. (See Note A-3.2.5.5.(1).)

2) Paths of travel for firefighters shall not be more than 45 m to the principal *suite* entry for

a) a *building* or portion of a *building*, of residential occupancy containing *dwelling units* with means of egress conforming with Article 3.3.4.4. provided directly to the exterior at adjacent *grade*, or

b) non-residential portions of a *building*, which are cut off from and have no internal access to the remainder of the *building*. (See Note A-3.2.5.5.(3)(b).)

3) The path of travel for firefighters to the main entry of a *dwelling unit* permitted by Clause (2)(a) may be increased to

a) 65 m where

i) *dwelling units* are separated from adjacent *floor areas* by a *fire separation* with at least 1 h *fire-resistance rating*,

ii) the *building sprinkler system* is hydraulically designed for the operation of at least 2 sprinklers, or with a 25% increase in the required discharge density where two or more sprinklers would otherwise be required to the NFPA 13, except that the *sprinkler system* may be designed to the hydraulic design criteria and sprinkler coverage requirements of NFPA 13R where the *building* would otherwise be permitted to be NFPA 13D,

iii) a strobe light is installed outside the principal entrance of the *dwelling unit*, and is connected to an internal *smoke alarm* within the *dwelling unit*,

iv) *sprinkler systems* are monitored by a fire alarm system or residential fire warning system and by an off-site monitoring service,

v) lighting and emergency lighting is provided along the path of travel for firefighters with a minimum illumination level of 1 lx, and average illumination of not less than 10 lx, and

vi) the *building* is provided with a fire alarm system and graphic annunciator, or

b) 90 m where

i) the requirements of Subclauses (a)(i) to (a)(vi) are met,

ii) no principal *dwelling unit* or its *ancillary residential unit* is located above another *dwelling unit*,

iii) a 64 mm diameter fire department hose connection is located adjacent to the path of travel for firefighters located not more than 45 m measured from the hose connection to the principal entrance of each of the *dwelling units*, and

iv) the location of the fire department hose connections required by Subclause (c)(ii) is indicated on the fire alarm system graphic annunciator, and

v) the *building* is sprinklered to NFPA 13.

4) The access route from the hydrant location to the *building* location or the principal entrance of the *building* as described in Sentences (5) and (6), shall be no more than 90 m. (See Note A-3.2.5.5.(4).)

5) Where the access route runs continuously across the face of a *building*, the length of the access route shall be measured by measuring the shortest distance between a line drawn perpendicular to the access route and through the hydrant and a line drawn perpendicular to the access route and through the principal entrance of the *building*. (See Note A-3.2.5.5.(5).)

6) Where the access route terminates before the principal entrance of a *building*, the length of the access route shall be measured by measuring from a line drawn perpendicular to the access route and through the hydrant straight along the access route to its terminus and thereafter along the actual path of travel to the principal entrance. (See Note A-3.2.5.5.(6).)

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 3.2.5.15.,

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.

9.10.20.3. Fire Department Access to Buildings

[...]

8) In a single detached house or duplex within the scope of Division A, Article 1.3.3.3., access routes are permitted to be located so that the path of travel for firefighters to the principal entrance of each *dwelling unit* or

ancillary floor area is not more than A single detached house or duplex may have access routes and a path of travel for firefighters to the principal entrance of each dwelling unit or ancillary floor area of not more than

a) 45 m where

i) there are at least two paths of travel by which an occupant may reach a street, lane, or public thoroughfare, or

ii) the path of travel by which an occupant may reach a street, lane, or public thoroughfare is protected from fire exposure from unprotected openings in accordance with Article 9.9.4.4.,

b) 65 m where

i) there are at least two paths of travel by which an occupant may reach a street, lane, or public thoroughfare,

ii) the building is provided with sprinklers hydraulically designed for the operation of at least two sprinklers in a fire compartment, or a 25% increase in the required discharge density where two or more sprinklers would otherwise already be required in accordance with NFPA 13, except that the sprinkler system may be designed to the hydraulic design criteria and sprinkler coverage requirements of NFPA 13R where the building would otherwise be permitted to be NFPA 13D,

iii) despite the requirements of Subclause (b)(ii) a fire department connection is not required,

iiiiv) the sprinkler system is connected to internal smoke alarms within the dwelling unit, provided with an exterior audible alarm, and off-site monitoring, and

ivv) a strobe light is installed outside the principal entrance of the dwelling unit, and is connected to an internal smoke alarm within the dwelling unit, or

c) 90 m where

i) the requirements of Subclauses (b)(i) to (b)(iv) are met, there are at least two paths of travel by which an occupant may reach a street, lane, or public thoroughfare,

ii) no principal dwelling unit or its ancillary residential unit is located above another dwelling unit,

iii) the building sprinkler system is designed to the NFPA 13,

iv) despite the requirements of Subclause (c)(iii) a fire department connection is not required,

v) the sprinkler system is connected to internal smoke alarms within the dwelling unit, provided with an exterior audible alarm, and off-site monitoring,

vi) a strobe light is installed outside the principal entrance of the dwelling unit, and is connected to an internal smoke alarm within the dwelling unit,

iiivii) an access path of at least 1.2 m wide is provided from each principal dwelling unit entry to the street, and

ivviii) lighting is provided along the path of travel for firefighters with a minimum illumination level of 1 lx, and average illumination of not less than 10 lx.