



# Public Review

## Vancouver Building By-law (VBBL)

### Proposed change to non-combustible construction (clarification)

**Topic:** Clarification on non-combustible construction

**Code change number:** 24-0005

**Code reference:** 3.7.2.1.(5);

Consequential changes to 3.7.2.1.(1), and a new explanatory note A-3.7.2.1.(5).

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## Description of the proposed change

The proposed change adds a new provision that clarifies what constitutes non-combustible construction where such protection required by the Canadian Electrical Code where a building is in close proximity to Di-electric liquid filled transformers.

## Justification

The Canadian Electrical Code currently prohibits openings within 6 m of pole mounted dielectric filled transformers in accordance with CEC Rule 26-014. Furthermore, the transformers must not be located within 6 m of any combustible surfaces or material on a building, any door or window, or any ventilation inlet or outlet.

The CEC requirements address known risks of fire or explosion from overhead di-electric filled transformers. While the CEC provide guidance with respect to appropriate clearances, it provides only a general statement regarding non-combustibility with respect to adjacent surfaces which could be exposed to fire.

The construction industry has stated that the application of non-combustible construction as defined in the VBBL is onerous, and it very problematic in lane oriented housing, and presumably also so for new multiplex housing. Therefore, in the absence of specific construction guidance in the CEC, this code change proposal introduces protection focusing on noncombustible or fire-resistant cladding and roofing to protect against the expected fire exposure.

The intent of these changes is that Clause (a) addresses the explosion, (i.e. the shock which could break windows and possible projectiles), Clause (b) addresses the higher intensity, largely downward flow of di-electric material and has a smaller diameter, and Clause (c) addresses the initial outward ejection of burning droplets, vented in the initial explosion or depressurization. This, while a larger area, isn't expected to provide for sustained burning due to limited fuel unless adjoining combustibles are ignited.

In some cases, tiles, pavers, or other roof coverings may be present which will have gaps, which must be limited to reduce the risk of fire spread into concealed spaces. The specified limits are intended to minimize the potential for such spread by either limiting the potential oxygen to sustain burning, or by flame arresting.

## Proposed VBBL content

### Legend

Black Text – 2019 Vancouver Building By-law content

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

### **3.1.5.25. Di-electric Liquid Filled Equipment**

1) Where noncombustible surfaces are required by the “*Electrical Safety Regulations*”, to prevent the exposure of combustible construction from di-electric liquid filled equipment, exterior wall assemblies and roof surfaces within the stipulated area shall

a) have no opening, or part thereof, within 6 m that are in direct line of sight to the equipment unless it is provided with

i) a solid noncombustible barrier between the equipment and unprotected opening,

ii) wired glass or fire-resistant glazing in steel, metal clad, or fire-rated frames, or

iii) a fire-rated closures tested to CAN/ULC-S104,

b) where on or within a sphere 3 m from the equipment, and in the horizontal plane projected to the ground below, exterior walls and roofs shall be constructed with the following

i) noncombustible materials tested to CAN/ULC-S114,

ii) cladding consisting of concrete or masonry not less than 25 mm thick, sheet steel not less than 1.6 mm thick, or non-combustible materials tested to CAN/ULC-S101 “*Fire Endurance Tests of Building Construction and Materials*” and complying with the conditions of acceptance in Sentence 3.2.3.8.(2), or

iii) non-combustible roofing materials, and

c) except as otherwise required by Clause (b), where on or within a sphere 6 m from the equipment, and in the horizontal plane projected to the ground below, exterior walls and roofs shall be protected with

i) continuous noncombustible cladding, flashing or roofing materials meeting the acceptance criteria of CAN/ULC-S114

ii) Concrete roof tiles with no gaps wider than 3 mm,

iii) Concrete pavers with no concealed space over 25 mm,

iv) Class A roofing material tested in conformance CAN/ULC-S107,

v) Windows with noncombustible frames or frames complying with 3.1.5.4.(5), or

vi) minor combustible components as necessary for the attachment of the roofing and cladding to the *building* structure.