

[Submit a comment](#)

## Proposed Change 1879

---

<b>Code Reference(s):</b>	<b>NFC20 Div.B 5.6.4.3.(1) (first printing)</b>
Subject:	Encapsulated Mass Timber Construction
Title:	Revisions to Protection Requirements for EMTC During Construction
Description:	This proposed change clarifies the requirement for the maximum exposed surface area of structural mass timber walls during building construction in Clause 5.6.4.3.(1)(d) and introduces explanatory Note A-5.6.4.3.(1)(d).

This change could potentially affect the following topic areas:

- |  |   |
|--|---|
| <input type="checkbox"/> Division A                                | <input type="checkbox"/> Division B                                   |
| <input type="checkbox"/> Division C                                | <input checked="" type="checkbox"/> Design and Construction           |
| <input type="checkbox"/> Building operations                       | <input type="checkbox"/> Housing                                      |
| <input type="checkbox"/> Small Buildings                           | <input checked="" type="checkbox"/> Large Buildings                   |
| <input checked="" type="checkbox"/> Fire Protection                | <input type="checkbox"/> Occupant safety in use                       |
| <input type="checkbox"/> Accessibility                             | <input type="checkbox"/> Structural Requirements                      |
| <input type="checkbox"/> Building Envelope                         | <input type="checkbox"/> Energy Efficiency                            |
| <input type="checkbox"/> Heating, Ventilating and Air Conditioning | <input type="checkbox"/> Plumbing                                     |
|  | <input checked="" type="checkbox"/> Construction and Demolition Sites |

---

## Problem

---

Article 5.6.4.3. of Division B of the National Fire Code of Canada (NFC) 2020 provides requirements for the encapsulation protection needed for mass timber elements in EMTC while the building is under construction. In particular, Clause 5.6.4.3.(1)(d) describes the requirement for the maximum exposed area of structural mass timber walls, which is linked to the requirements in Sentences 3.1.6.4.(4) and (5) of Division B of the National Building Code of Canada (NBC) 2020.

The current wording in the NFC is unclear as to how to apply the 35% area limit that is referenced, which could result in overly restrictive interpretation. In the NFC, the 35% area limit is linked to the total area of structural mass timber walls within a storey, while in the NBC the 35% limit is linked to the total wall area of the perimeter of the suite.

Therefore, the wording of NFC Clause 5.6.4.3.(1)(d) needs to be aligned with the intent of the NBC to clarify how the perimeter dimensions (for either suites or entire storeys) are to be calculated and applied to meet the maximum limits for exposed mass timber walls during construction.

---

## Justification

---

The NBC 2020 provisions for EMTC allow structural mass timber walls to be left exposed within a suite. The 35% upper limit on the actual surface area of mass timber walls that can be left exposed within the suite is linked to the total surface area of the perimeter walls enclosing the suite.

This limit is also applied as a fire safety measure that is required during construction. During the construction of EMTC, protective encapsulation materials providing an encapsulation rating of not less than 25 min are required on structural mass timber walls such that the total surface area of structural mass timber walls that are exposed is not more than 35% of the area of the perimeter walls.

For the calculation of the actual amount of surface area permitted to be left exposed, this proposed change would revise the NFC wording to clarify the intent and allow Code users to apply a consistent approach to calculating the area of the perimeter walls, which is consistent with the requirements in the NBC.

The revised wording would also more clearly link the 35% maximum value to either the perimeter walls of any suite on the storey or, when the entire storey is a single suite, to the perimeter walls of the entire storey.

The addition of proposed Note A-5.6.4.3.(1)(d) would also clarify that the area of openings (doors or windows) within any perimeter wall is to be included in the area calculations.

---

## PROPOSED CHANGE

---

### NFC20 Div.B 5.6.4.3.(1) (first printing)

#### **[5.6.4.3.] 5.6.4.3. Protective Encapsulation**

**[1] 1)** Except as provided in Sentences (2) and (3), to address safety during construction, a protective encapsulation material or an assembly of materials providing an *encapsulation rating* of not less than 25 min, as determined in accordance with Sentence 3.1.6.5.(1) of Division B of the NBC, shall be installed

[a] a) such that not more than 20% of the area of the underside of each mass timber floor assembly on each *storey* is exposed during construction,

[b] b) on the interior side of stairways required by Sentence 5.6.3.7.(3) and of *vertical service spaces* where the enclosures are constructed

- of mass timber elements,
- [c] c) on each face of solid lumber or mass timber *partitions* not less than 38 mm thick and on each face of *partitions* containing wood framing as permitted by Article 3.1.6.15. of Division B of the NBC, and
  - [d] d) such that ~~not more than 35% of the total~~ the exposed surface area of structural mass timber walls within the *storey* ~~is exposed during construction~~ does not exceed:
    - [i] --) the aggregate exposed surface area of the *suite* stated in Sentence 3.1.6.4.(5) of Division B of the NBC, or
    - [ii] --) 35% of the total wall area of the perimeter of the *storey* (see Note A-5.6.4.3.(1)(d)).
- (See Note A-5.6.4.3.(1).)

### **Note A-5.6.4.3.(1)(d)**

The intent of Clause 5.6.4.3.(1)(d) is that the maximum area of mass timber walls that is permitted to be exposed in the finished building also be permitted to be exposed during construction. In the calculation of the total wall area of the perimeter of a suite or storey, the area of any wall openings, such as doors or windows, are included.

---

## **Impact analysis**

---

This proposed change is not expected to entail costs not otherwise intended by the current Code provisions as it would clarify the intent and application of Clause 5.6.4.3.(1)(d).

By aligning the NFC requirements for calculating the permitted area of exposed mass timber walls during construction with those of the NBC for the completed building, the expectation is that costs would either remain the same or be reduced due to the harmonization of the two sets of requirements.

---

## **Enforcement implications**

---

There are no anticipated enforcement implications as the proposed change can be enforced by the existing Code enforcement infrastructure. The clarification in this proposed change is also expected to facilitate the enforcement of the Code requirements.

---

## Who is affected

---

Architects, designers, developers, owners and engineers would benefit from the increased clarity provided by this proposed change.

Authorities having jurisdiction, including fire departments, would need to continue to evaluate their operating procedures in accordance with the Code requirements for EMTC.

---

## OBJECTIVE-BASED ANALYSIS OF NEW OR CHANGED PROVISIONS

---

### NFC20 Div.B 5.6.4.3.(1) (first printing)

[\[5.6.4.3.\]](#) 5.6.4.3. ([\[1\]](#) 1) [F02-OS1.2]

[\[5.6.4.3.\]](#) 5.6.4.3. ([\[1\]](#) 1) [F02-OP1.2]

[\[5.6.4.3.\]](#) 5.6.4.3. ([\[1\]](#) 1) [F02-OP3.1]