

*Established in 1889, the Ontario Association of Architects (OAA) is the self-regulating body for the province's architecture profession. It governs the practice of architecture and administers the Architects Act in order to serve and protect the public interest.*

The Secretary, Canadian Board for Harmonized Construction Codes  
1200 Montreal Road, Building M-20  
Ottawa, ON K1A 0R6

Sent by email to: [CBHCCSecretary-SecretaireCCHCC@nrc-cnrc.gc.ca](mailto:CBHCCSecretary-SecretaireCCHCC@nrc-cnrc.gc.ca)

February 14, 2024

**Re: CBHCC Consultation on Province-led Changes to Encapsulated Mass Timber Construction in the National Model Codes**

To Whom It May Concern:

The Ontario Association of Architects (OAA) continues to monitor and respond to proposals to harmonize the Ontario Building Code with the National Model Codes. In its role of serving the public interest, the Association is particularly watching the impact of harmonization on operational and embodied carbon, as well as other measures to address the climate crisis.

The OAA is encouraged that the Canadian Board for Harmonized Construction Codes (CBHCC) continues to accommodate encapsulated mass timber construction (EMTC) by adding objective and functional statements in the National Model Codes.

Increasing the design options available by removing technical barriers is critical. Architects have an important role to play in upfront carbon emissions as they are responsible for specifying the materials used in the construction of buildings. According to the [Canada Green Building Council](#) (CaGBC):

Decarbonizing Canada's built environment will require decisive action on both operational carbon and embodied carbon. Embodied carbon must be treated with the same urgency as operational carbon [.]

In reviewing these proposed codes changes, the OAA supports the additional inclusion of EMTC information, but believes public safety must be paramount. Fire safety should not be reduced to a lower standard in encapsulated mass timber construction in comparison to other building materials/construction types. Further, consideration must be given to how these various fire safety standards interact in mixed-material buildings.

The OAA strongly urges CBHCC to consider not only the technical aspects, but also the possible risks of EMTC. There is limited consideration for, or real-life experience with, fire safety and life safety.

While the OAA supports the addition of the revised measures for the protection of encapsulated mass timber during construction, the impact of including requirements on the contractor's means and methods of construction in the building code should be carefully examined.

This is a significant shift in scope that changes the roles, responsibilities, and liabilities of contractors and consultants, with potential significant impact on insurance costs. There should also be cross-referencing to the National Fire Code and an explicit explanation as to how to maintain fire safety and transition from temporary measures to permanent ones.

Amid the global climate emergency, policymakers ought to look toward reducing carbon emissions from buildings as a key factor in advancing climate action. While innovations in design, including encapsulated mass timber, are on the right track to reducing a building's carbon emissions, carbon accounting must be considered. It is imperative sustainable practices be used in this new building method to ensure it is not inherently working against the public by compromising Canada's natural forests.

The OAA strongly urges CBHCC to also consider how carbon accounting can be contemplated in the National Model Codes, especially with respect to the sourcing of materials for construction.

Buildings contribute significantly to the climate crisis, but they can also be instrumental in advancing climate action. CBHCC is uniquely positioned to make a meaningful contribution in this area and, with the codes currently under review, the time to act is now.

The OAA enjoys a longstanding, collaborative relationship with government and policymakers, and looks forward to continued work with CBHCC. Please do not hesitate to reach out should you have further questions or need clarification.

Sincerely,



Settimo Vilardi, Architect  
M.Arch., OAA, FRAIC  
President

CC to:

James Ross, Manager  
Building Code Policy Development Unit  
Ministry of Municipal Affairs and Housing  
Email: [James.Ross@ontario.ca](mailto:James.Ross@ontario.ca)

Mansoor Mahmood, Director  
Building and Development Branch  
Ministry of Municipal Affairs and Housing  
Email: [mansoor.mahmood@ontario.ca](mailto:mansoor.mahmood@ontario.ca)

2 of 2

Table: Potential Changes To the NBC 2020 and NFC 2020:

**Background from CBHCC:**

The 6 proposed changes in this round of review cover the topic of Encapsulated Mass Timber Construction (EMTC) and seek to address key aspects in the National Building Code of Canada, the National Fire Code of Canada: EMTC – Building heights for various occupancy types and encapsulation ratings, Encapsulation of mass timber elements, Encapsulation materials, Combustible cladding, Major occupancy fire separations and Additional requirements for EMTC.

**Legend for Rankings:** 1. I support this proposed change as is. | 2. I support this proposed change as-is with comment(s). | 3. I support this proposed change with modification(s).  
 | 4. I do not support this proposed change for the reason(s) stated to the right. | 5. I have reviewed this proposed change and I have no opinion on it. | 6. Not Reviewed

National Building Code 2020	CBHCC - Link to proposed EMTC changes	Ranking Status 1-6	Status	Comments - Ontario Association of Architects
<b>Division B</b>				
<b>EMTC Proposed Change 01</b>				
Code Reference(s): NBC20, Div. B 3.2.2. Subject: EMTC, Various Heights and Occupancy Types, Sprinklered Title: New Construction Article Summarizing All EMTC Building Types				
<p><b>Description:</b></p> <p>This proposal is for the addition of a new construction Article in 3.2.2. covering a set of entirely new building types of EMTC, all in one consolidated place (i.e., Article/Table 3.2.2.93.), for the sake of simplicity and minimizing downstream effects (i.e., re-numbering) elsewhere in the Code. All new allowances match those suggested by the Transferability Report and generally mirror the International Building Code (IBC). Maximum permitted building heights in the Table reflect the 4.2m/floorplate allowance that is more conducive to EMTC assembly thicknesses, whose adoption is currently before the Standing Committees (SC) for acceptance into the current Code. Sprinklers are required for all proposed buildings. Maximum permitted building areas are determined in a similar fashion to those determined for the original two EMTC construction Articles. While using a Table to summarize new building types is not the typical way to add allowances to 3.2.2., this approach is surmised to be the least disruptive and most streamlined way to add nearly 20 new building archetypes. As research and application of EMTC continues to rapidly progress, this approach also enables easy advancement of EMTC allowances in the future.</p> <p>*Note: this proposed change was provided by the Joint Task Group – Harmonized Variations for Mass Timber*</p> <p>Related Proposed Change(s): PCF02, PCF03, PCF04, PCF05, PCF06</p>	<a href="https://cbhcc-cchcc.ca/en/emtc-proposed-change-01/">https://cbhcc-cchcc.ca/en/emtc-proposed-change-01/</a>	2	I support this proposed change as is with comment(s).	<p>It is recognized that consolidating the EMTC requirements in 3.2.2.93. is expedient, not ideal, and that code users will have to use of 3.2.2. differently for EMTC than for other construction types. This type of change should be kept to a minimum. Consistency of use should remain a prime objective.</p> <p>It is proposed to change the wording on sentence 3.2.2.93.(5) from "building height" to simply "height" or "height of the building". "building height" is a defined term in the NBC referring to the number of storeys in a building. In 3.2.2.93.(5) it is associated with a distance measurement e.g. 55 m. Changing the wording to "height" would correspond to the "Max. Height" column in proposed Table 3.2.2.93.</p>

Table: Potential Changes To the NBC 2020 and NFC 2020:

National Building Code 2020	CBHCC - Link to proposed EMTC changes	Ranking Status 1-6	Status	Comments - Ontario Association of Architects
<b>EMTC Proposed Change 02</b>				
<b>Code Reference(s): NBC20, Div. B 3.1.6.4.</b> <b>Subject: Encapsulation of Mass Timber Elements</b> <b>Title: Expanding Encapsulation Rating Requirements Based on Hazard</b>				
<p><b>Description:</b></p> <p>This proposed change (PCF01) lays the foundation for mirroring the IBC structure of three different tiers of required encapsulation rating ('noncombustible protection' in the IBC) based off hazard. Instead of the existing 50 min rating for all EMTC, readers will be directed to a Table in new Article 3.2.2.93. for the applicable encapsulation rating. (See PCF04) Existing relaxations regarding wood exposure for medium-level hazard buildings (those with a 50 min encapsulation rating) will stand. Exposure allowances described in Sentences (3) to (7) have been updated to harmonize with upcoming changes in the 2025 NBCC. No relaxations will be offered for the new higher-hazard EMTC tier (70 min encapsulation rating), thereby implying full encapsulation. With the addition of a new Sentence, the new lower-hazard EMTC tier (0 min) will be exempted from encapsulation requirements, except in select critical locations.</p> <p>Related Proposed Change(s): PCF01, PCF03, PCF04, PCF05, PCF06</p>	<p><a href="https://cbhcc-cchcc.ca/en/emtc-proposed-change-02/">https://cbhcc-cchcc.ca/en/emtc-proposed-change-02/</a></p>	<p>4</p>	<p>I do not support this proposed change for the reason(s) stated to the right.</p>	<p>The report concluded that "the NBCC can adopt the International Building Code Type IV-A, IV-B, and IV-C provisions with careful, and in most cases, more conservative modifications."</p> <p>It is noted that the aggregate exposed surface percentage is increased in Clause 3.1.6.4.(3)(a). This is not a conservative modification. This proposed change follows the British Columbia Building Code which is less conservative than the International Building Code.</p> <p>The table indicates no encapsulation ratings are required for EMTC buildings up to 6 and 8 stories; buildings which would be required to have fire resistance ratings if built with any other type of construction. The table allows most building classifications to have up to 5 stories or more with 0 H rating. This does not appear to have safety in mind. The OAA is concerned that the wording of this proposed change could give EMTC's special, lesser safety requirements than comparable non-combustible construction systems.</p> <p>Explanatory material should be included to clear up confusion about the intent of, and differences between, encapsulation ratings and fire resistance ratings.</p>
<b>EMTC Proposed Change 03</b>				
<b>Code Reference(s): NBC20, Div. B 3.1.6.6</b> <b>Subject: Encapsulation Materials</b> <b>Title: Prescriptive Option for 70 min Encapsulation Rating</b>				
<p><b>Description:</b></p> <p>This proposed change offers a prescriptive option to achieve the new 70 min encapsulation rating by means of two layers of 5/8" Type-X GWB, in addition to the existing 50 min provision. This roughly mirrors the IBC. (See attached Transferability Report).</p> <p>*Note: this proposed change was provided by the Joint Task Group – Harmonized Variations for Mass Timber*</p> <p>Related Proposed Change(s): PCF01, PCF02, PCF04, PCF05, PCF06</p>	<p><a href="https://cbhcc-cchcc.ca/en/emtc-proposed-change-03/">https://cbhcc-cchcc.ca/en/emtc-proposed-change-03/</a></p>	<p>2</p>	<p>I support this proposed change as is with comment(s).</p>	<p>The addition of Article 3.1.6.6. does not seem to address the requirements for fire rating over structural steel members that link the mass timber elements.</p> <p>Clarification is required. Perhaps it would help to define and refer to an EMTC system in order to distinguish it from the combustible EMTC wood elements.</p>

Table: Potential Changes To the NBC 2020 and NFC 2020:

National Building Code 2020	CBHCC - Link to proposed EMTC changes	Ranking Status 1-6	Status	Comments - Ontario Association of Architects
<b>EMTC Proposed Change 04</b>				
<b>Code Reference(s): NBC20, Div. B 3.1.6.9</b> <b>Subject: Encapsulation Cladding</b> <b>Title: Tiered permissions for combustible cladding</b>				
<b>Description:</b>  A change is proposed to Article 3.1.6.9. of the 2020 NBC to allow for variations in cladding as a function of the EMTC building height, including those that are proposed as new EMTC building types in new Article 3.2.2.93. Currently, the NBC requirements for cladding are generally a function of required/permitted type of construction. This means, for example, that even though a building constructed of EMTC in conformance with Article 3.2.2.48. (Group C, up to 12 storeys, Sprinklered) of the 2020 NBC may only be 1 storey in building height, the type of cladding is restricted on the same basis as to what is permitted for a 12-storey building constructed of EMTC under the same Article. As implied by the existing provisions of Clause 3.1.5.5.(1)(a), the fire spread risk associated with combustible cladding generally increases with increasing building height, and potentially to a lesser degree as a function of building area (i.e., greater building area typically equates to larger building facades). Therefore, given that the new proposed EMTC building area limits are constant with building height, it is proposed to consider options for varying the requirements for cladding construction as a function of building height and provide more direct alignment between degree of combustibility of cladding and fire risk. The proposed cladding options as a function of building height for the current NBC 2020 and the new Sentence 3.2.2.93. EMTC building types are summarized in Table 1.  *Note: this proposed change was provided by the Joint Task Group – Harmonized Variations for Mass Timber*  Related Proposed Change(s): PCF01, PCF02, PCF03, PCF05, PCF06	<a href="https://cbhcc-cchcc.ca/en/emtc-proposed-change-04/">https://cbhcc-cchcc.ca/en/emtc-proposed-change-04/</a>	1	I support this proposed change as is.	No comments
<b>EMTC Proposed Change 05</b>				
<b>Code Reference(s): NBC20, Div. B Table 3.1.3.1.</b> <b>Subject: Table 3.1.3.1. Major Occupancy Fire Separations</b> <b>Title: Removal of requirements for higher fire-resistance rating (FRR) in EMTC major occupancy separations</b>				
<b>Description:</b>  Extending application of the current requirements for fire-resistance rating in major occupancy fire separations of EMTC buildings to all newly proposed occupancy types would prove to be cumbersome and problematic. More importantly, upon deeper analysis it was determined that these requirements were historically introduced as a compensatory measure of a larger suite of code changes and are non-technical in nature. The requirements for fire-resistance ratings contained in Article/Table 3.1.3.1. have traditionally been determined on the fire risk (combined fuel load and ease of egress) of occupancies in relation to one another. Their purpose is to protect against the situation in which two occupancies having vastly different fire protection requirements are adjacent to one another and not suitably separated. For this reason, certain occupancies of similar risk are permitted by the Table to have separations with a FRR of 0. Therefore, requiring a higher FRR based off construction type, as has been done in the case of EMTC, is arbitrary and not based in sound fire safety principles. With this proposal to allow EMTC across most major occupancies, it is therefore proposed that these be removed. The array of fire protection principles whose effectiveness has been demonstrated over decades in buildings of both combustible and noncombustible construction should be considered sufficiently safe to protect EMTC buildings and their occupants as well.  *Note: this proposed change was provided by the Joint Task Group – Harmonized Variations for Mass Timber*  Related Proposed Change(s): PCF01, PCF02, PCF03, PCF04, PCF06	<a href="https://cbhcc-cchcc.ca/en/emtc-proposed-change-05/">https://cbhcc-cchcc.ca/en/emtc-proposed-change-05/</a>	4	I do not support this proposed change for the reason(s) stated to the right.	In evaluating the proposed change, it is assumed that removing 3.1.3.1.(7) does not negate the requirement in 3.3.5.6. but reduces the fire separation from 2 hours to 1.5 hours. It is also assumed that removing 3.1.3.1.(8) does not negate the requirements noted in 3.2.3.17.  Clarification that these assumptions are correct or if alternate interpretations govern should be explicit in the text.  Except for 4 instances, the current NBC requirements for major occupancy separations are not tied to construction type (combustible, noncombustible, heavy timber or EMTC). For consistency, if major occupancy separations are indeed non-technical in nature, should not the 4 instances be technically evaluated rather than just tweaked so as not to impact EMTC?  The OAA recommends that fire separations between occupancy types should not be influenced by construction type.



Table: Potential Changes To the NBC 2020 and NFC 2020:

National Building Code 2020	CBHCC - Link to proposed EMTC changes	Ranking Status 1-6	Status	Comments - Ontario Association of Architects
<b>National Fire Code 2020</b>				
<b>EMTC Proposed Change 06</b>				
<b>Code Reference(s): NFC20, Div. B 5.6.4.3.</b> <b>Subject: Additional Requirements for EMTC</b> <b>Title: Revised measures for protection of EMTC during construction</b>				
<p><b>Description:</b></p> <p>This proposed change mirrors the proposed changes contained in PCF1872 and PCF1879, currently undergoing public review as a part of their implementation into the National Model Codes. This proposed change describes revisions to Article 5.6.4.3.-2020 addressing the minimum requirements and exceptions for encapsulation of mass timber elements during construction in buildings permitted to be of encapsulated mass timber construction.</p> <p>*Note: this proposed change was provided by the Joint Task Group – Harmonized Variations for Mass Timber*</p> <p>Related Proposed Change(s): PCF01, PCF02, PCF03, PCF04, PCF05</p> <p><a href="https://cbhcc-cchcc.ca/en/emtc-proposed-change-06/">https://cbhcc-cchcc.ca/en/emtc-proposed-change-06/</a></p> <p>A distinction should be made between measures intended to address life safety of workers during construction and protection of the building itself during construction.</p> <p>In Ontario, the former are found in the Occupational Health and Safety Act, not in the building code. Including worker safety provisions in the NBC will make adoption of the provisions more difficult in Ontario.</p> <p>Construction means and methods have traditionally been the purview and responsibility of the contractor and explicitly stated as such in CCDC construction contracts and in RAIC and OAA contracts for architects. Including the proposed changes in the NBC is a significant philosophical change.</p> <p>In light of the changes and uncertainty created by the Supreme Court of Canada decision in R. v. Greater Sudbury (City); including provisions relating to construction means and methods may have significant unintended impact on the liabilities for consultants where the consultant must certify general compliance with the documents forming the basis for the issuance of the building permit.</p> <p>Perhaps these provisions belong in an installation guide or standard, and details be required as part of the construction site safety plan.</p> <p>If what is proposed is not the only means of achieving the desired objective then the option to propose an alternative solution should be stated.</p> <p>The durability of the temporary measures being proposed should be evaluated as replacing gypsum board at every level because it was exposed to the weather or to mechanical damage is not consistent with durability, embodied energy, or zero carbon goals and policies.</p>				