



STATE OF WASHINGTON
STATE BUILDING CODE COUNCIL

May 2018
Log No. _____

1. State Building Code to be Amended:

- | | |
|---|---|
| <input checked="" type="checkbox"/> International Building Code | <input type="checkbox"/> International Mechanical Code |
| <input type="checkbox"/> ICC ANSI A117.1 Accessibility Code | <input type="checkbox"/> International Fuel Gas Code |
| <input type="checkbox"/> International Existing Building Code | <input type="checkbox"/> NFPA 54 National Fuel Gas Code |
| <input type="checkbox"/> International Residential Code | <input type="checkbox"/> NFPA 58 Liquefied Petroleum Gas Code |
| <input type="checkbox"/> International Fire Code | <input type="checkbox"/> Wildland Urban Interface Code |
| <input type="checkbox"/> Uniform Plumbing Code | |

For the Washington State Energy Code, please see specialized [energy code forms](#)

Section(s):

2304.11.2.1, 2304.11.2.2, 2304.11.3.1, 2304.11.4.1

Title:

Prescriptive thicknesses for cross-laminated timber (CLT)

2. Proponent Name (Specific local government, organization or individual):

Proponent: Todd Beyreuther, PE
Title: Adjunct Research Professor, WSU Composite Materials and Engineering Center
Date: 05/31/2021

3. Designated Contact Person:

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- 4. Proposed Code Amendment.** Reproduce the section to be amended by underlining all added language, striking through all deleted language. Insert new sections in the appropriate place in the code in order to continue the established numbering system of the code. If more than one section is proposed for amendment or more than one page is needed for reproducing the affected section of the code additional pages may be attached.

Code(s) 2021 IBC **Section(s)** 2304.11.2.1, 2304.11.2.2, 2304.11.3.1, 2304.11.4.1

Enforceable code language must be used.

Amend section to read as follows:

2304.11.2.1 Exterior walls. *Exterior walls* shall be permitted to be *cross-laminated timber* not less than ~~4-inches~~ 3.5 inches (~~102mm~~ 88mm) in actual thickness meeting the requirements of Section 2303.1.4.

2304.11.2.2 Interior walls and partitions. Interior walls and partitions shall be of solid wood construction formed by not less than two layers of 1-inch (25 mm) matched boards or laminated construction ~~4-inches~~ 3.5 inches (~~102mm~~ 88mm) ~~thick~~ in actual thickness, or of 1-hour fire-resistance-rated construction.

2304.11.3.1 Cross-laminated timber floors. *Cross laminated timber* shall be not less than ~~4-inches~~ 3.5 inches (~~102mm~~ 88mm) in actual thickness. *Cross-laminated timber* shall be continuous from support to support and mechanically fastened to one another. *Cross-laminated timber* shall be permitted to be connected to walls without a shrinkage gap providing swelling or shrinking is considered in the design. Corbelling of masonry walls under the floor shall be permitted to be used.

2304.11.4.1 Cross-laminated timber roofs. *Cross laminated timber* roofs shall be not less than ~~3-inches~~ 2.5 inches (~~76mm~~ 63mm) ~~nominal~~ in actual thickness and shall be continuous from support to support and mechanically fastened to one another.

- 5. Briefly explain your proposed amendment, including the purpose, benefits and problems addressed.** Specifically note any impacts or benefits to business, and specify construction types, industries and services that would be affected. Finally, please note any potential impact on enforcement such as special reporting requirements or additional inspections required.

The proposed amendments all address prescriptive thickness requirements of cross-laminated timber in Chapter 23 originally added in the 2018 IBC model code. With the addition of Type IV-A/B/C construction types in Section 6 of the 2021 IBC model code. Section 602.4 combines the new performance-based requirements of Type IV-A/B/C with the existing prescriptive requirements of Type IV-HT in Chapter 2304.11:

602.4 Type IV. Type IV construction is that type of construction in which the *building elements* are *mass timber* or noncombustible materials and have *fire-resistance ratings* in accordance with Table 601. *Mass timber* elements shall meet the *fire-resistance-rating* requirements of this section based on either the *fire-resistance rating* of the *noncombustible protection*, the *mass timber*, or a combination of both and shall be determined in accordance with Section 703.2. The minimum dimensions and permitted materials for *building elements* shall comply with the provisions of this section and Section 2304.11.

The proposed amendments to 2304.11.2.1 Exterior walls, 2304.11.2.2 Interior walls or partitions, and 2304.11.4.1 Cross-laminated timber roofs simply add consistency and

specificity in language (actual thicknesses rather than mix of actual, nominal, or not-defined) without modification of prescribed CLT thickness. Nominal dimensions are not used by CLT manufacturers, architects, engineers, or contractors.

*The proposed amendment to **2304.11.3.1 Cross-laminated timber floors** proposes a change from 4" actual thickness to 3.5" actual thickness with proposed justification of equivalency to or exceedance of allowable prescriptive nominal thicknesses in 2304.11.3.2 Sawn or glued-laminated plank floors:*

2304.11.3.2 Sawn or glued-laminated plank floors.

Sawn or glued-laminated plank floors shall be one of the following:

1. Sawn or glued-laminated planks, splined or tongue-and-groove, of not less than 3 inches (76 mm) nominal in thickness covered with 1-inch (25 mm) nominal dimension tongue-and-groove flooring, laid crosswise or diagonally, 15/32-inch (12 mm) wood structural panel or 1/2-inch (12.7 mm) particleboard.

The benefit of the proposed prescriptive thickness change to CLT floors adds consistency and flexibility in specification between CLT, GLT, NLT, DLT and is inclusive of standardized metric CLT sizes of 90mm and 100mm. The additional performance requirements in Section 602.4 Type IV remain unchanged.

6. Specify what criteria this proposal meets. You may select more than one.

- The amendment is needed to address a critical life/safety need.
- The amendment clarifies the intent or application of the code.
- The amendment is needed to address a specific state policy or statute.
- The amendment is needed for consistency with state or federal regulations.
- The amendment is needed to address a unique character of the state.
- The amendment corrects errors and omissions.

7. Is there an economic impact: Yes No

Explain:

If there is an economic impact, use the tool below to estimate the costs and savings of the proposal on construction practices, users and/or the public, the enforcement community, and operation and maintenance. If preferred, you may submit an alternate cost benefit analysis.

Provide your best estimate of the construction cost (or cost savings) of your code change proposal? (See OFM Life Cycle Cost [Analysis tool](#) and [Instructions](#); use these [Inputs](#). **Webinars on the tool can be found [Here](#) and [Here](#)**)

\$Click here to enter text./square foot (For residential projects, also provide \$Click here to enter text./dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages

List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:

Please send your completed proposal to: sbcc@des.wa.gov

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.