



STATE OF WASHINGTON
STATE BUILDING CODE COUNCIL

1. State Building Code to be Amended:

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

Section(s):

IBC Code Sections

Section: 202
Section: R403.3.2
Section 504.3
Section 504.4
Section 506.2
Section 508.4.4.1
New Section 509.4.1.1
Section 602.4
New Section 703.8
New Section 703.9
Section 718.2.1
New Section 722.7
Section 3102
Appendix D102.2.5

IFC Code Section

Section 701.6
New Section 3308.9

Title:

Definitions
Water supply to required fire pumps
Allowable building height
Allowable number of stories
Allowable area
Construction of fire barriers
Type IV construction types
Fire-resistance rating requirements for building elements
Fire-resistance rating requirements for exterior walls
Determination of noncombustible protection time contribution

Sealing of adjacent mass timber elements
Fire blocking
Fire resistance rating of mass timber
Type of construction
Structural fire rating
Owner's responsibility
Fire safety requirements for buildings of Types IV-A, IV-B and IV-C construction

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

Proponent: AIA Washington Council

Title:

Date: May 1, 2018

3. Designated Contact Person:

Name: Jeffrey Hamlett, AIA

Title: Executive Director

Address: 1010 Western Avenue, Seattle, WA 98104

Office Phone:

Cell: (425) 314-3847

E-Mail address: hamlett@aiawa.org

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. (Examples on the SBCC [website](#))

Code(s) UBC & UFC **Section(s)** Please see Sections noted in Section 1 of this document.

Enforceable code language must be used; see an example [by clicking here](#).

Amend section to read as follows: Please see Attachment A for our proposed changes to the code.

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.

This amendment is proposed to permit the use of mass timber in the construction of taller buildings. The development and use of mass timber in the construction of taller buildings has been proceeding apace in other areas of the world, and technical performance research and testing in the United States has demonstrated that buildings constructed of cross-laminated timber (CLT) and other mass timber components can be built safely and meet the intent of the code at taller heights.

This code amendment proposal is the result of over 2 years of comprehensive research and testing, including full-scale fire tests, completed by the ICC Ad Hoc Committee on Tall Wood Buildings

(TWB). The TWB Committee is a diverse group of Building Code Officials, Engineers, Architects and Industry representatives, including the steel, concrete and wood industries. The result of the TWB Committee's work is a collection of 14 code change proposals written to allow the safe construction of taller mass timber buildings. These 14 code change proposals were overwhelmingly approved by the ICC, at the Committee Action Hearing (CAH) in Columbus, Ohio in April of 2018. Committee members approved the amendments from a 12-2 to 14-0 margin, making adoption in to the 2021 International Building code very likely. In accordance with ICC Committee members, we feel there is sufficient technical justification to support changes to the Washington State building and fire codes to permit the safe use of mass timber in taller buildings, and be a leader in tall wood building design by adopting the 14 code changes in advance of the International Building Code.

There are definite economic benefits to enacting these proposed amendments, which is why the Legislature weighed in and passed ESB 5450 directing the SBCC to adopt rules for the use of mass timber products for residential and commercial building construction. A recent study on advancing CLT production in the Pacific Northwest found that this industry could generate up to 17,300 jobs and generate significant income for the workers and the State (see Attachment D). While this report focuses on Oregon, the findings are also applicable to Washington.

The Legislature passed ESB 5450 to assist in the development of a mass timber manufacturing, construction and design industries within the state. The timber communities will additionally benefit by increased logging activities of the smaller diameter trees on which mass timber manufacturing is based and help prevent catastrophic wildfires on state lands that are too densely planted and have not been managed for extended periods of time. Rather than exporting raw logs abroad, a manufacturing base of mass timber will preserve working forest landscapes in the state, sequester atmospheric carbon, create a value-added engineered timber building component and create new jobs and opportunities in the state's rural economies while providing a sustainable building material. Construction of a new CLT manufacturing facility is about to begin and a second is currently under construction in northeastern Washington. These facilities will provide new jobs to rural Washington and provide domestic supply for the industry. Currently, there are only two domestic suppliers of cross-laminated timber in the United States. The projects currently being built in the region are purchasing material from Canada, Germany, and Austria, with some being purchased from the new JR Johnson plant in Oregon.

Mass timber construction will comprise a relatively small percentage of overall construction in Washington State and therefore pose minimal negative impacts on the concrete and steel manufacturing and construction industries as buildings. Also, the typical mass timber building utilizes concrete in the floor system and foundation, and steel connections are the mechanism for providing the necessary ductility in the structural system to resist earthquakes. Moreover, buildings taller than 18 stories, are not permitted to be constructed of mass timber in the proposed code amendment, so these tall buildings will have no impact. By providing a new construction option for owners and developers, mass timber will stimulate competition, cost competitiveness and innovation in the construction market. Depending on the exact circumstances, the ability to use mass timber may lead to development of taller buildings where previously owners and developers would have built a shorter building because the cost of building a taller building using concrete or steel was cost prohibitive in the market. As the construction industry gains experience with mass timber construction, the construction speed will increase (through the use of accelerated construction methods) and costs associated with labor, equipment, and financing will reduce. The current economic models show that mass timber buildings fit the 10-18 story size of building well. This could serve to meet density goals in our cities and provide additional housing capacity, a critical issue in Washington State. Recent examples of mass timber buildings have shown that the construction timeline is shortened by 3-8 months, which reduced the time of disruption of normal city operations around the construction site.

We see no potential impact with respect to enforcement. While mass timber will have different special reporting aspects than concrete or steel construction, all such construction has special reporting requirements.

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 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:

Adoption of this proposed code amendment will have no direct economic impact because it does not mandate owners to choose mass timber as a construction methodology. Instead, this proposed amendment would provide an additional option for owner and designers to choose from when selecting a building’s structural system. While the overall cost impact of a structural system will depend on project specifics, research suggests that mass timber can be a cost competitive and even cost saving approach when compared to more traditional steel and concrete building methods. A report exploring the feasibility of CLT in the Pacific Northwest found that mass timber could offer a 4% savings when compared to other building methods (see Attachment E). Mass timber offers a new cost effective approach to buildings between 10 and 18 stories tall, which are not currently being built in steel and concrete because these construction methodologies are too expensive to build at these heights.

If there is an economic impact, use the Table 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.

Building Type	Construction ¹		Enforcement ²		Operations & Maintenance ³	
	Costs	Benefits ⁴	Costs	Benefits ⁴	Costs	Benefits ⁴
Residential						
Single family						
Multi-family						
Commercial/Retail						
Industrial						
Institutional						

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

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

¹ \$ / square foot of floor area or other cost. Attach data. **Construction** costs are costs prior to occupancy, and include both design and direct construction costs that impact the total cost of the construction to the owner/consumer.

² Cost per project plan. Attach data. **Enforcement** costs include governmental review of plans, field inspection, and other action required for enforcement.

³ Cost to building owner/tenants over the life of the project.

⁴ Measurable benefit.