



Tall Mass Timber Design Guidelines

Purpose

Direction for engineers and architects regarding the design requirements for Tall Mass Timber buildings.

Code Reference

2019 California Building Code (CBC)

2021 International Building Code (IBC) Sections 403.3.2, 504.3, 504.4, 506, 508.4, 509.4, 602.4, 701.6, 703.8, 703.9, 718.2.1, 722.7, 3102, IBC Appendix D

2021 International Fire Code (IFC) Section 3308.4

Background

Fourteen code-change proposals for the safe construction and use of mass timber buildings were submitted for the International Code Council (ICC) Group A Committee Action Hearings in 2018. All 14 proposals were either Approved as Submitted or Approved as Modified. These approved proposals allow for the construction of tall mass timber buildings up to 18 stories and will be published in 2021 edition of the IBC. Mass timber includes any product currently permitted for use in Type IV construction, such as Cross Laminated Timber, Structural Composite Lumber, glued-laminated timber, and large section sawn lumber.

ICC approved three new types of construction:

1. Type IV-A construction is fully protected with noncombustible materials and will have the same fire resistance rating as Type I-A construction. A maximum building height of 270 feet and a maximum number of 18 stories above grade is allowed.
2. Type IV-B construction allows for some exposed wood surfaces on ceilings, walls, columns, and beams and will have the same fire resistance rating as type I-B construction. A maximum building height of 180 feet and a maximum number of 12 stories above grade is allowed.
3. Type IV-C construction relies on the inherent fire-resistance of the mass timber itself and does not require noncombustible protection of interior elements. Type IV-C construction will have the same fire resistance ratings as Type I-B construction. A maximum building height of 85 feet and a maximum number of 9 stories above grade is allowed.

The applicable 2021 ICC code sections are listed above and can be found in the following approved code change proposals: G108-18, FS5-18, FS81-18, FS6-18, FS73-18, G28-18, F88-18, F266-18, G75-18, G80-18, G84-18, G146-18, G152-18, G89-18.

Findings

Until the State of California adopts or modifies the above mentioned code sections, projects designed using Tall Mass Timber buildings will be reviewed for approval through the Alternate Materials and Methods of Construction (AMMC) process in the City of San Jose. Applicants shall comply with the most recent approved version of the codes in place at the time of AMMC approval.