

Mass Timber Rises

Building codes and federal legislation could be a winning combination

BY ROBERT GLOWINSKI AND
DAVE TENNY

Modern timber structural systems developed for high-rise building design provide the first significant alternative to building with concrete and steel in more than a century. Achieving this milestone is no small feat, given the flurry of activity from competing industries that have aligned to prevent additional market entrants.

Fortunately, the introduction of these new systems is not only a priority for the wood products and forestry industries, but is also being driven by innovative building designers, engineers, and researchers who are seeing successful implementation of tall wood buildings across Canada, Europe, and other parts of the world. They are recognizing the growing pressure to find renewable, low-carbon alternatives to incumbent structural materials for use in development of the urban world, and are naturally turning to wood for a solution.

As detailed below, the US is making



**Robert
Glowinski**



Dave Tenny

substantial progress in achieving broader acceptance for mass timber building systems, but there is still work to be done. An immediate challenge is gaining recognition of tall mass timber buildings in the 2021 edition of the *International Building Code (IBC)*, the model code adopted in almost all US jurisdictions. Additionally, the US Congress is considering language to encourage additional cooperative research and development into mass timber construction that could further help change the way we build. Progress in both the building code and legislative arenas will be a significant leap in making mass timber construction more widely possible in the United States.

Building codes

While heavy timber (Type IV construction in the current IBC) is one of the oldest wood construction methods recognized in building codes to date, innovative mass timber products have now expanded what is possible within this category. And, as these innovations gain broader acceptance, construction standards are evolving to keep up.

Notably, the International Code Council (ICC) reviews and updates its family of building codes on a three-year cycle. The 2015 *International Building Code* was the first edition to recognize and provide specifications for cross-laminated timber (CLT), one type of mass timber that has most recently garnered much of the design community's imagination. However, other mass timber products such as structural composite lumber, laminated strand lumber, laminated veneer lumber, oriented strand lumber, parallel strand lumber and glued laminated timber (glulam) have all been long-recognized in past versions of the building codes.

ICC is currently undergoing the process of developing its 2021 edition of the building and fire code. Recognizing the emergence of mass timber globally, in 2015, ICC established an Ad Hoc Committee on Tall Wood Buildings to research the building science of tall



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Brock Commons dormitory is an 18-story mass timber hybrid building on the campus of the University of British Columbia.

wood buildings and make recommendations on how to extend its recognition in the code. The committee was comprised of 17 member-experts, including building and fire officials, fire protection engineers, architects, structural engineers, and representatives from all major materials groups. After two years of study that included full-scale compartment fire testing, the committee developed a package of 14 tall mass timber code change proposals (<https://bit.ly/2qw8Aug>) that would allow for construction of mass timber buildings up to 18 stories. These code change proposals are in process and will be finalized by ICC's Governmental Voting Members later this month. Approval will result in their incorporation into ICC's 2021 building codes.

However, with mass timber construction already underway in several US locations, some states are eager to provide guidance and incorporate construction provisions for tall mass timber building into their current state codes. For example, the state of Oregon began allowing tall mass timber construction under their unique code system as of August 2018. Similarly, the state of Washington has passed a bill supporting the use of mass timber for building construction "in a manner that ensures resilient, safe, and durable structures." The Washington State bill requires the state to adopt rules for



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Mass timber samples shown during the “Timber City” exhibit at the National Building Museum in Washington, DC.

mass timber construction following such adoption by ICC.

Timber Innovation Act

Within the US Congress, the bipartisan Timber Innovation Act (TIA) represents another opportunity to expand the understanding and markets for mass timber construction. The bill directs the U.S. Forest Service to act on its existing mandate, “To sustain the health, diversity, and productivity of the nation’s forests and grasslands to meet the needs of present and future generations,” and provide research and development support for exploring, expanding, and accelerating mass timber use.

Encouragement from the federal government to further develop this emerging construction technology, as it has with other market innovations, will help drive the use of a renewable resource as a viable alternative to more energy and carbon intensive materials, as well as support infrastructure development and job creation in America’s rural communities that have yet to recover from the Great Recession.

Mass timber construction is also a win for the environment. As an emerging market, it helps increase demand for wood products. Research shows that strong markets for wood products is the economic engine that drives investment in working forests, protecting them from conversion to other land uses, like development. Though it may seem counterintuitive, the more demand that exists for forest

products, the more likely forests will remain intact. Keeping forests as forests means cleaner air and water, more wildlife habitat and a variety of other environmental benefits that improve overall quality of life for millions of Americans.

Much of the TIA’s language is now included in House and Senate Farm Bills.

Adoption of the updated building codes and passage of a Farm Bill containing the TIA will help bring mass timber to a tipping point that will help us build the low carbon, energy efficient and environmentally superior communities of tomorrow.

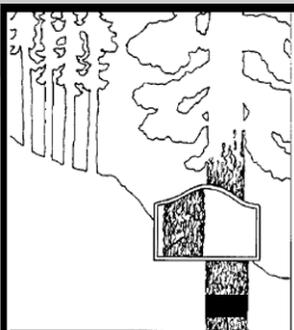
To learn more about the building code process and tall mass timber code change proposals, visit www.awc.org/tallmasstimber. Visit www.timberinnovation.org for more information about TIA and the Farm Bill. ♦

Robert Glowinski is the president and CEO of the American Wood Council, which represents 86 percent of the structural wood products industry.

Dave Tenny is the president and CEO of the National Alliance of Forest Owners, which represents more than 46 million acres of private working forests across the United States.

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