UMass Amherst Design Building I
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NATIONAL REAL ESTATE Investor

CRE Developers Recognize Growing Business Case for Wood Construction

The benefits of building CRE structures with light-frame, mass timber and pre-fab wood can include cost savings, faster production and a competitive edge for new projects.

Developers are facing tough challenges with rising construction costs, securing tenants to speed lease-up and differentiating their properties in a crowded market. Wood construction is one solution helping developers meet shifting market demands.

Wood construction — specifically light-frame, mass timber and pre-fab — is playing a growing role in mainstream commercial and multifamily development. Wood's momentum is evident in boutique and large-scale properties popping up from coast-to-coast. Some big name players, including Hines[1] and Lendlease[2], are using wood to enhance the design, functionality and financial performance of new projects.

[1] "Hines Unveils Model for New Toronto Timber Office Tower." Don Wall. Daily Commercial News. March 8, 2019
https://canada.constructconnect.com/dcn/news/projects/2019/03/hines-unveils-model-new-toronto-timber-office-tower

[2] "Lendlease Begins Construction on Second CLT Hotel in US." Lendlease News Release. March 5, 2018.
https://www.lendlease.com/us/-/media/llcom/investor-relations/media-releases/2018/mar/20180305-lendlease-begins-construction-on-second-clt-hotel-in-us.pdf

Developers recognize the myriad benefits of building with wood, including efficiency, sustainability, market differentiation and ability to meet code. Financial incentives are also persuasive, impacting a project's bottom line.

When it comes to structural applications, wood construction offers advantages:

- **Light-frame construction: Often the "go-to" framing choice for residential and commercial buildings (typically used in Type V and Type III construction), light-frame is popular as it typically costs less than other materials and is easily assembled by skilled laborers.**

- **Mass timber: A new category of wood product that is changing how we build. Mass timber is comprised of multiple solid wood panels nailed or glued together, which provide exceptional strength and stability. It's a strong, low-carbon alternative to concrete and steel.**[3]

- **Pre-fabricated wood: Wood pre-fab systems offer a variety of benefits that include higher quality control due to off-site engineering and assembly as well as cost efficiencies related to the speed of assembly on-site.**

Cost Savings

Industry research is revealing the business case for wood construction. A study of one- to four-story light-frame office buildings conducted by WoodWorks showed wood offices can cost 20 to 30 percent less per square foot than their non-wood counterparts.[4] According to the American Forest Foundation, contractors can reduce labor and material costs with panelizing, the process of assembling roof sections on the ground and then lifting them into place. Typical savings in West Coast construction markets range from $1.25 to $1.50 per square foot over conventional steel joist systems.

"T3 uses the only structural material that comes from a renewable resource. With timber beams, it has the desirable aesthetic of an old warehouse, but solves all the problems of energy efficiency, acoustics and light."

Bob Pfefferle, project development director of Hines Minneapolis [5]

[3] Timber Tower Research Project, Skidmore Owings and Merrill. May 2013. https://www.som.com/ideas/research/timber_tower_research_project

[4] "Getting Down to Business: The Cost/Value Proposition of Timber Offices." Ricky McLain, PE, SE, Senior Technical Director, WoodWorks Wood Products Council. Sep. 10, 2018. https://www.woodworks.org/wp-content/uploads/presentation_slides-MCLAIN-PART-1-The-Cost-Value-Proposition-of-Timber-Offices-AIA-2018.pdf

[5] "T3 Minneapolis: The Emergence of Wood in Modern Office Design." https://www.hines.com/case-studies/t3

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Speed

One of the biggest incentives of building with wood products, like prefab and mass timber, is their fast assembly on site, reducing labor costs and creating speed-to-market advantages. Shear walls of the John W. Oliver Design Building at UMass Amherst were constructed from cross-laminated timber (CLT) panels; four 60-foot-tall CLT panels were placed with a crane and anchored to the foundation in a single weekend.[6]

Sustainability

Wood construction is a sustainable choice because it is the only naturally renewable building material. It also has a lower environmental impact than alternative products, like concrete or steel. Global life-cycle assessment studies have shown that wood buildings create lower greenhouse gas emissions, less air and water pollution, lower volumes of solid waste and less ecological resource use than other materials.[7] The environmental benefits of wood are resonating with both investors and building occupiers. According to a survey conducted by Hodes Weill & Associates, investors are paying more attention to sustainable attributes as part of "green" investing mandates related to environmental social governance (ESG) policies.[8] Tenants are also attracted to environmentally-friendly buildings when it comes to choosing where they work, live and play.[9]

T3 I Photography Courtesy of Ema Peter and Wood Specialist Consultant Architecture firm MGA | Michael Green Architecture

Competitive Edge

With growing tenant demand for creative office space and a more sustainable footprint, some first movers are discovering a competitive edge by building with wood. In 2016, Hines developed T3, a 225,000-square-foot mass timber office building in Minneapolis. According to Hines, T3's mass timber design resulted in greater sustainability and lower occupancy costs, which the marketing team has used to bolster leasing[10] — including landing global retail giant Amazon as an anchor tenant. Since T3 Minneapolis' initial success, Hines has continued to build more mass timber projects in Atlanta, Houston and Toronto.[11]

[6] "Inspiration through Innovation." WoodWorks Wood Products Council. 2017. https://bct.eco.umass.edu/wp-content/uploads/2018/01/UMass-Amherst-Olver-Design-Building-WoodWorks-Case-Study-2017.pdf

[7] CORRIM: Life-Cycle Environmental Performance of Renewable Building Materials. Bruce Lippke, Jim Wilson, John Perez-Garcia, Jim Bowyer, and Jamie Meil. Forest Products Journal. June 20, 2004. http://maineghg.raabassociates.org/Articles/CORRIM%20June%202004.pdf

[8] Institutional Real Estate Allocations Monitor. Hodes Weill & Associates and the Cornell Baker Program in Real Estate. 2019. https://www.hodesweill.com/research

[9] "Who wants green features in an apartment: Multifamily generational trends. Katie Gloede. Oct. 2, 2014. The Journal of the American Institute of Architects. https://www.architectmagazine.com/technology/who-wants-green-features-in-an-apartment-multifamily-generational-trends_o

[10] http://www.t3northloop.com/reduce-occupancy-costs.html

[11] "Hines unveils model for new Toronto timber office tower." Don Wall. March 8, 2019. Daily Commercial News. https://canada.constructconnect.com/dcn/news/projects/2019/03/hines-unveils-model-new-toronto-timber-office-tower

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MOTO I Photo Credit: Ronnie Leone

Wood Meets Code

Today's building codes are designed to improve fire resistance and protect life safety, regardless of building material. Wood buildings are designed to meet the same level of fire performance as buildings made from alternative materials.[12] Wood's safety and performance is recognized by the International Building Code (IBC), which allows six stories of wood construction under the current code and is set to increase to up to 18 stories tall in 2021, when making use of mass timber.[13]

Wood has a long history of proven structural and fire performance, which is why it is used not only in 90 percent of all U.S. home construction but also in some of today's most innovative commercial, midrise and high-rise architecture. Fires rarely, if ever, start in the structural materials of occupied buildings. Rather, they begin in the contents and furnishings of a room.[14]

Heavy timber has a particular advantage in a fire because it chars on the outside while retaining strength, slowing combustion and allowing time to evacuate the building. This charring effect offers increased safety and means mass timber is predictable when exposed to fire.[15]

Wood is a cost-effective and sought after material for projects that span a range of building types and sizes. Increasingly, developers and project designers consider wood construction as a safe, sustainable choice that can also help to give projects a competitive edge. For more information on the benefits of designing and building with wood, visit thinkwood.com.

[12] Mid-Rise Wood-Frame Buildings, 2019, Structure, https://www.structuremag.org/?p=14188

[13] Tall Wood Buildings in the 2021 IBC - Up to 18 Stories of Mass Timber, WoodWorks - Wood Products Council, 2018, http://www.woodworks.org/wp- content/uploads/wood_solution_paper-TALL-WOOD.pdf

[14] Top fire causes, 2019, National Fire Protection Association (NFPA). https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Top-fire-causes

[15] Charring Behavior of Structural Timber Elements in Full-Scale Fire Tests of Three Story Timber School Buildings, Waseda University, Department of Architecture, 2016, https://research.thinkwood.com/en/permalink/catalogue1706