BUILDING TALLER WITH WOOD

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Tall wood buildings are gaining momentum around the world.

Over the past several years, a number of tall wood projects have been completed around the world, demonstrating successful applications of next-generation lumber and mass timber technologies. Today, the concept is gaining traction in the U.S. – with more architects opting for a sustainable solution for attaining safe, cost-effective, high-performing tall buildings in urban-dense settings.

With more than 17 tall wood buildings of seven stories or more having been built around the world serving as demonstration projects, building officials, designers, contractors and consumers are more confident than ever in the safety of these buildings.

Murray Grove
London, United Kingdom
8 Stories
2009

Forté
Melbourne, Australia
10 Stories
2012

TREET
Bergen, Norway
14 Stories
2015

HoHo
Vienna, Austria
24 Stories
2017

Baobab
Paris, France
35 Stories
Proposal

WOOD BUILDINGS ARE SAFE AND VERSATILE

With the right safety measures in place, such as properly-installed sprinkler systems, fire-resistance-rated wall and floor/ceiling assemblies and open spaces around the building's perimeter, tall wood buildings can be designed to meet and exceed fire safety requirements. Fire design of wood structural members, such as mass timber, is based on recognized procedures that account for the rate of wood charring, insulating characteristics of the char layer, and retention of strength and stiffness of the wood fiber away from the char layer. Additionally, encapsulation through application of protective membrane layers, such as gypsum board, is a recognized approach to delay onset of direct wood exposure to fire and improved overall performance. To date, research has demonstrated that solid wood structural elements can be designed to provide a two-hour fire-resistance rating, as is required for taller buildings.

Years of research and real-life experience have proven that wood buildings can withstand effects of major wind and seismic events. These structures, when properly designed and constructed, are high performing and provide strength, stiffness, and ductility necessary to provide life safety protection and preserve building function.

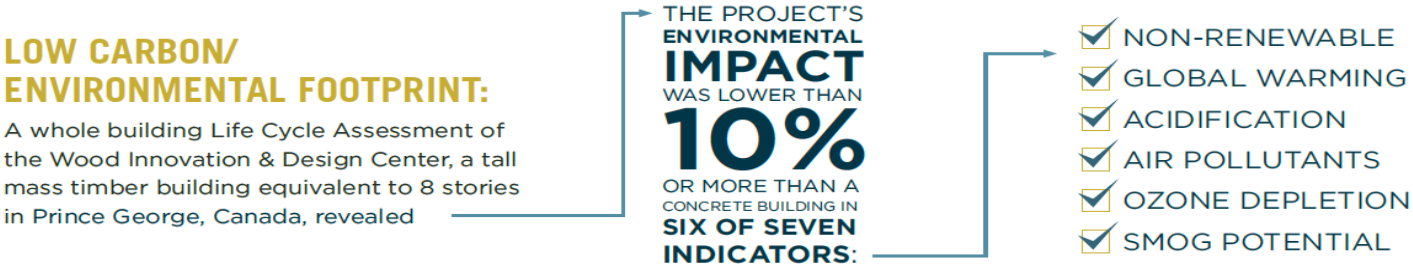
Wood buildings are durable and can be designed to last a lifetime. For example, a mass timber system was used in the 1974 rebirth of the nine-story Butler Square Building in Minneapolis. Heavy timber post and beam construction provided an adaptable solution, and has allowed the building to stand strong since 1900.

WOOD BUILDINGS ARE KEY TO A SUSTAINABLE BIOECONOMY

The choice of products used to build, renovate and operate structures consumes more of the earth's resources than any other human activity. To this effect, when specifying any materials, it is important to consider their life cycle environmental impacts. Because wood products have less embodied energy, help lower air and water pollution, and have a lighter carbon footprint than other commonly used building materials, a strong argument can be made that wood products make significant contributions to reducing the environmental impact of a building over its lifetime. Additionally, in the case of wood products, sustainable forest management certification complements the life cycle

assessment, providing a more complete picture by encompassing parameters such as biodiversity conservation, soil and water quality, and the protection of wildlife habitat.

- Wood is the only building material that sequesters carbon, thus significantly reducing the overall carbon footprint of a project.
- Wood manufacturing requires far less energy and results in fewer greenhouse gas emissions than its major competitors, concrete and steel. A U.S. Forest Service-sponsored LCA study found that using wood in lumber and panel products yields fewer greenhouse gas emissions than other common building materials.



DEMAND FOR WOOD AND SUSTAINABLE MANAGEMENT PROTECT U.S. FORESTS AND RURAL ECONOMIES

Wood products play a significant role in a modern economy. The U.S. wood products industry employs more than 548,000 people in manufacturing and forestry. U.S. private-forest owners support 2.4 million jobs and $87 billion in payroll. Sustainable forest management practices in the U.S. restrict harvest levels and help maintain important forest values such as biodiversity and wildlife habitat. In the U.S., the rate of deforestation due to forestry activity has been virtually zero for decades. Since 1952, the growth-removal ratios for both softwood and hardwood show that growth has exceeded harvest.

By making forest sustainability and innovation top priorities, the wood products industry will continue to be a significant employer and supporter of rural economies.

- The environmental benefits associated with wood products— renewability, responsible forest practices and a light carbon footprint—are helping to strengthen markets for wood products, in turn stabilizing the wood industry's ability to create jobs and support local economies.
- Strong markets for wood products provide a financial incentive for landowners to invest in their forests and keep them healthy for future generations.

For more information and resources on tall wood buildings, visit www.rethinkwood.com.

Image Credit: Survey of International Tall Wood Buildings

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