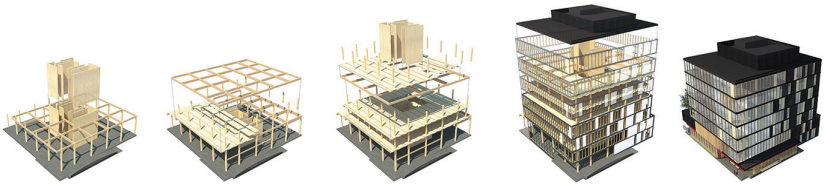
TEACHING DESIGN PROFESSIONALS ABOUT WOOD IN BUILDING



Details of the Wood Innovation and Design Centre
Used by permission of Michael Green Architecture

CASE STUDY: MICHAEL GREEN ARCHITECTURE

Michael Green Architecture (MGA) is a firm that specializes in wood building design and encourages further development through outreach and education. Driven to find a carbon-neutral alternative to major construction materials, lead architect Michael Green advocates using mass timber panels to erect urban skyscrapers as a way to meet the worldwide housing demand without increasing emissions.

In 2012, the firm released a 200-page feasibility study titled *The Case for Tall Wood Buildings* that encourages architects and engineers to consider mass timber panels as a viable material for tall buildings. The study outlines the economic viability and safety of the material and is a resource for architects unfamiliar with mass timber panels.

MGA also offers formal instruction to architects and engineers. In 2013, the firm hosted site visits to the Ronald McDonald House of British Columbia construction site in Vancouver, Canada. Participants toured the houses constructed with cross-laminated timber (CLT) and listened to discussions on the structural design of the building.

To further promote wood building, MGA designed the Wood Innovation and Design Centre in Prince George, British Columbia. The 90-foot-tall tower is the tallest building made of wood in North America and is designed to showcase methods for building with wood. The center will serve as an example of sustainable architecture and encourage the design of future wood building projects.

CASE STUDY: WOODWORKS

WoodWorks, an initiative of the Wood Products Council, provides free, one-on-one technical support to architects and engineers on wood building design. Through partnerships with the Forest Service, major North American wood associations, and other organizations, WoodWorks promotes the construction of wood buildings.

WoodWorks provides technical expertise on a wide range of building types including schools, mid-rise/multi-family, commercial, corporate, franchise, retail, public, institutional and more. WoodWorks hosts yearly conferences across the country and provides workshops and training opportunities on a range of topics to expose architects and engineers to wood design.

To encourage further advancement, WoodWorks hosts a series of awards, known as the Wood Design Awards. These awards acknowledge excellence in wood design, engineering and construction, and highlight innovative projects that demonstrate qualities such as sustainability, strength, versatility, cost effectiveness and beauty. The Bullitt Center, a six-story commercial building in Seattle, Washington, constructed using 100% Forest Stewardship Council certified wood, won the 2014 Multi-Story Wood Design Award. The Bullitt Center is the first heavy timber building constructed in Seattle since the 1920s.

The Bullitt Center, a six-story commercial building in Seattle, Washington
Used by permission of Benjamin Benschneider

BACKGROUND

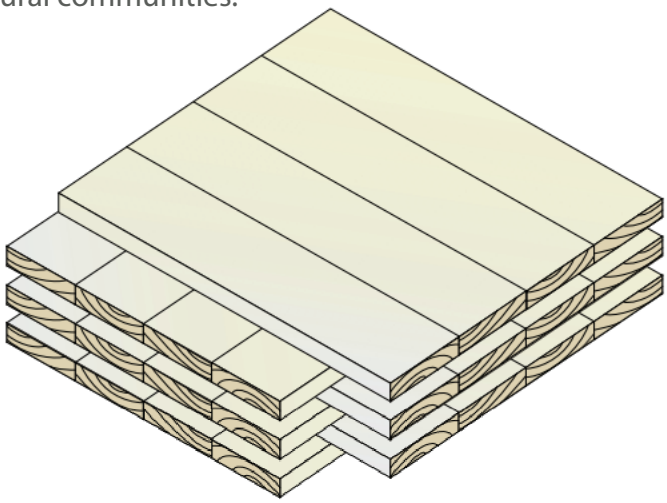
Although steel and concrete skyscrapers typically fill modern city skylines, architects and engineers are beginning to reconsider the benefits of using wood as a material for tall buildings. Wood is a renewable material that results in lower levels of carbon emissions than other major building materials. It can also be significantly less expensive, creating cost savings for producers and users.

Wood can be used to build skyscrapers more than 30 stories high with a new form of engineered material called CLT. The CLT panels manufactured in North America are up to 20 inches thick and are perpendicularly layered to make them strong in multiple directions. These panels are as strong as steel and are more fire resistant than other materials because of the way that wood burns.

Despite the many advantages of wood building, architects and engineers are traditionally trained to work with materials like concrete and steel. WoodWorks and Michael Green Architecture are two organizations that teach architects, engineers, and building code officials about the benefits of building with wood.

WOOD INNOVATION

The USDA Forest Service is working to weave wood into the fabric of diverse sectors, including energy production and green building. When managed in a way that protects forested ecosystems, a diversified wood products industry enhances resiliency of our ecosystems, sequesters carbon, and creates jobs in rural communities.



Cross-laminated timber (CLT) diagram
Used by permission of reThink Wood

Wood Innovation and Design Centre in Prince George, British Columbia
Used by permission of Ema Peter

QUICK FACTS

- ✔ Wood is renewable and often outperforms other materials in terms of energy usage and air pollution.
- ✔ Wood provides design flexibility at lower costs than other major building materials.
- ✔ Wood structures can be safely built to comply with building codes.
- ✔ Wood is a resilient building material. It is slow to burn, performs well during seismic events, and can be easily adapted with basic construction tools in the aftermath of disasters.

REFERENCES & MORE INFORMATION:

- USDA Forest Service Wood Innovation Website
- USDA Forest Products Laboratory Website
- U.S. Tall Wood Building Prize Competition Website
- Michael Green Architecture Website
- Bullitt Center Website
- reThink Wood Website
- WoodWorks Website

USDA is an equal opportunity provider, employer, and lender.