

# CROSS-LAMINATED TIMBER AND GREEN BUILDING



Stadthaus, Murray Grove, in London, England  
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## CASE STUDY-UNITED KINGDOM: THE STADTHAUS, 24 MURRAY GROVE

Constructed entirely from cross-laminated timber (CLT) panels, except the foundation, this nine-story residential high-rise in the London Borough of Hackney is the pioneer of wood buildings in the world. Known to many as “Stadthaus” and also “Murray Grove,” this building was the tallest modern wood structure in the world in 2009. The building, commissioned by Metropolitan Housing Trust and developed by Telford Homes, houses 29 apartments with offices on the ground floor.

Using CLT from KLH United Kingdom, a specialty supplier of CLT panels, Waugh Thistleton Architects designed a unique structure that reduces the environmental impact of the entire building process.

The entire building was prefabricated off-site and completed in 49 weeks. The building sequesters a large amount of carbon due to its high wood content, and significant emissions were avoided by not using traditional building materials that generate emissions from the burning of fossil fuels during their production.



East Coast Winner: 475 West 18th, New York, NY  
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## CASE STUDY-UNITED STATES: U.S. TALL WOOD BUILDING PRIZE COMPETITION

The U.S. Department of Agriculture, in partnership with the Softwood Lumber Board and the Binational Softwood Lumber Council, sponsored the U.S. Tall Wood Building Prize Competition in September 2015. The two winning projects met the Competition’s criteria to showcase the safe application, practicality and sustainability of a minimum 80-foot-tall structure that uses mass timber, composite wood technologies and innovative building techniques. The goals of the Competition were to support employment opportunities in rural communities, maintain the health and resiliency of the nation’s forests and advance sustainability in the built environment.

Framework (Portland, OR) and 475 West 18th (New York City, NY) will each will receive \$1.5 million to begin project work, including the research and development necessary to utilize engineered wood products in high-rise construction in the U.S.



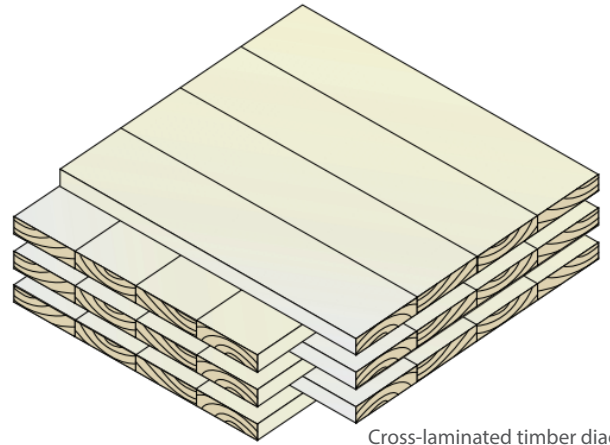
West Coast Winner: Framework, Portland, OR  
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## BACKGROUND

Cross-laminated timber (CLT) is a wood panel made of several layers of dried lumber boards stacked in alternating directions, glued and pressed to form rectangular panels. CLT structural panels have exceptional strength and stability and can be used as floors, walls and roofs in building construction.

Because of its high strength, dimensional stability and design flexibility, CLT is proving to be a highly advantageous alternative to traditional building materials, such as concrete, masonry and steel, in many building types. CLT offers low environmental impacts compared to traditional building materials. Additionally, wood as a building material generally has lower economic and environmental costs but still delivers exceptional beauty, versatility and performance.

CLT panels consist of an odd number of layers of wood (usually, three, five, or seven). Panels are customized for each project and each cut to a precise design. Then, the panels are shipped to the construction site for assembly, where panels are fastened together. Because CLT panels are prefabricated and assembled on-site, the length of construction time can be reduced and use of CLT panels generates almost no waste onsite.



Cross-laminated timber diagram  
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## 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.

## 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.



Stadthaus interior during assembly (CLT panels),  
Murray Grove, London, England  
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## REFERENCES & MORE INFORMATION:

- [USDA Forest Service Wood Innovation Website](#)
- [USDA Forest Products Laboratory Website](#)
- [U.S. Tall Wood Building Prize Competition Website](#)
- [Waugh Thistleton Architects Ltd. Website](#)
- [reThink Wood Website](#)
- [WoodWorks Website](#)
- [APA-The Engineered Wood Association Website](#)
- [KLH UK Website](#)