Forest Service
U.S. DEPARTMENT OF AGRICULTURE

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# Promoting Sustainable Structures: #AskforWood to Ensure Healthy Forests

Launched in 2013, Clemson University's Wood Utilization + Design Institute (WU+D) is making significant strides in transforming how municipalities, institutions, and the construction and design community perceive the benefits of wood, wood products, and alternative wood markets. Through its multifaceted approach, this unique collaboration among students, professors, foresters, and building industry stakeholders promotes the diverse use of innovative wood-based materials to compete with steel, concrete, and other materials currently used in the construction of buildings and other structures.



## Supporting the Local Environment and Economic Sustainability

WU+D is forging new markets to grow South Carolina's forest products industry. This approach benefits both the environment and the economy. The use of local wood (including southern yellow pine and other native species) leads to healthier forests, promotes rural economic development, increases financial opportunities for landowners, and decreases greenhouse gas emissions. In its work, WU+D is developing forest management protocols to grow trees with higher quality fiber and provide direct marketing of wood-based solutions. This includes groundbreaking manufacturing and construction processes for wood-based products, resins, adhesives, and fasteners.

Key to many sustainable wood construction projects is the use of mass timber, often employing multiple solid wood panels or beams and columns glued or connected using nails or dowels. Mass timber provides exceptional fire resistance, strength, and stability, offering a low-carbon alternative to concrete and steel. WU+D initiatives are specifically exploring the use of native woods in cross-laminated timber (CLT), a type of mass timber.

In 2019, southern yellow pine CLT was used to construct Clemson University's Andy Quattlebaum Outdoor Education Center. According to Patricia Layton, Ph.D., Director of WU+D, the Center serves as a showpiece for hosting events and promoting wood buildings, while marketing the Institute's research and design capabilities. Construction of a second mass timber structure on Clemson's campus, the Samuel J. Cadden Chapel, is slated for completion in 2021. Beyond these projects, the WU+D team continues exploring application of CLT in low- and mid-rise buildings on and off campus, developing and promoting mass timber noise barriers for highways, and using mass timber construction in high-velocity wind zones.

### Engaging the Talent and Creativity of the Next Generation

WU+D also enhances educational and career opportunities of Clemson students by preparing the next generation of architects, engineers, foresters, and material and wood scientists. The Institute creates an experiential learning environment, allowing undergraduate and postgraduate students to test products they have developed in actual building projects. WU+D also fosters collaborative research connecting Clemson's main campus with its statewide research and public service centers.

### Support from Stakeholder to Ensure Success

The success of WU+D is due in part to a United States Department of Agriculture (USDA) Forest Service Wood Innovations Grant, which helped launch the Institute, as well as funding and support from other private and public partners. "We are in the home stretch of completing this grant, using the last funds to develop promotional materials for mass timber and engage with industry stakeholders across the country," Dr. Layton said. "Thanks to the support of our partners, we have been able to make a positive impact on the promotion and use of mass timber—one that heals the environment and strengthens the Southern economy through the use of local materials."

Cover page photo: The second mass timber building construction project on Clemson University campus to use local timber, the Samuel J. Cadden Chapel is set to be completed in 2021. Courtesy photo by Clemson University Relations.

## FAST FACTS

- WU+D is advancing the use of innovative wood-based construction materials.
- WU+D is forging new markets to grow South Carolina's forest products industry—a win-win for both the environment and the economy. Using local wood leads to healthier forests, promotes rural economic development, increases financial opportunities for landowners, and decreases greenhouse gas emissions.
- WU+D initiatives are specifically exploring the use of native woods in CLT, a type of mass timber that provides exceptional fire resistance, strength, and stability, offering a low-carbon alternative to concrete and steel.
- WU+D enhances educational and career opportunities of Clemson students by preparing the next generation of architects, engineers, foresters, and material and wood scientists.

Get more information on WU+D and its partners at: Clemson.edu/wud, askforwood.org, linkedin.com/company/wud,@wudclemson, and wudclemson@gmail.com.

### More Information

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Pat Layton (second from left) tours the site of the Andy Quattlebaum Outdoor Education Center with industry stakeholders and the building construction team. The building was completed and opened to the public in 2020 before the pandemic. Courtesy photo by Clemson University Relations.