Institute aims to create new markets for wood-based construction materials

CLEMSON — Clemson University has formed a new institute whose founders hope to change how commercial buildings are constructed in the U.S.

Clemson’s Wood Utilization + Design Institute (WU+D) will leverage the university’s assets in forestry, architecture, construction science and engineering to design, test and market innovative, sustainable wood-based materials for use in a commercial construction market dominated by steel and concrete.

In the process, WU+D hopes to forge new markets for South Carolina’s $17 billion forest products industry, form partnerships with corporations needing product design consultation and testing, and prepare Clemson students to take leadership roles in designing and marketing future innovations in wood-based construction technology.

“South Carolina has the timber, design and manufacturing muscle to produce sustainable wood-based solutions that challenge conventional approaches to commercial building. And Clemson has the resources to help make it happen,” said WU+D director Patricia Layton.

One such engineered wood product is the Cross Laminated Timber (CLT).

“CLT panels are as strong and stable as concrete, made from a sustainable and renewable resource, and extremely cost-effective, and we want to see them being manufactured here in South Carolina,” Layton said.

CLT is comprised of wood boards laminated perpendicular to each other in three to nine layer panels. The panels are manufactured and machined, then brought to construction sites for precise assembly.
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CLT already is being used in Europe and Canada, but U.S. building codes and lack of marketplace familiarity means that CLT is not widely used here.

"CLT has the potential to transform the commercial construction market while expanding South Carolina's already strong timber industry and manufacturing infrastructure. We believe that Clemson’s WU+D Institute is perfectly positioned to advance the use of wood in new and inventive ways," said Micky Scott, president of Collum’s Lumber Products LLC, located in Allendale.

A Clemson University Creative Inquiry team of civil engineering and construction science students led by civil engineering professor Scott Schiff already has performed extensive testing of CLT.

WU+D also will develop forest-management methodologies that result in improved wood fiber production, and will design other wood-based construction solutions using materials that include engineered wood, such as oriented strand board, or OSB.

WU+D will provide technical expertise as Clemson’s Solar Decathion team engages in a nearly two-year process of designing, testing and building an affordable energy-efficient home to compete against 18 other universities in Solar Decathlon 2015. The house then will be reconstructed at the competition site in Irvine, California.

Layton, a forestry professor and forest industry veteran, comes to WU+D after four years as director of Clemson’s School of Agricultural, Forest, and Environmental Sciences. The Society of American Foresters recently named her as a Fellow for her contributions to the profession.

WU+D team members include:

- Dustin Albright, assistant professor of architecture;
- Jimmy Martin, chair, Glenn Department of Civil Engineering;
- Dan Harding, associate professor of architecture;
- Katherine Schwennsen, director, School of Architecture;
- Vincent Blouin, associate professor, architecture and materials science and engineering;
- Roger Liska, chair, construction science and management;
- Scott Schiff, professor of civil engineering; and
- Weichiang Pang, assistant professor of civil engineering.

WU+D will be housed in the Harris A. Smith building on Clemson’s main campus.

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