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Howard Hughes Medical Institute at Janelia Farm

Winning Trio Drives RTA Beyond Convention

Thinking Smart, Outside the Wall

Improving Nature's Building Materials

STUDENTS ENGINEER MILLWORK MARVEL WITH COMPOSITE PANEL CORE

Jordan Backs, Tyler Hartman, Matt Beverlin, Ryan Larson, Keith Kellenberger, Charlie Jameson, and Tim McCune

When advanced projects call for traditional materials to be used in new and unique ways, the challenges can sometimes be best met by young blood, fresh with knowledge of the latest technology, software and materials from the top wood technology universities in the country.

In 2005 Tyler Hartman and Ryan Larson worked as summer interns for Jefferson Millwork in Sterling, Va. At the time both were students in the Wood Technology Program at Pittsburg (Kansas) State University College of Technology.

Jefferson Millwork had been contracted for all interior millwork for the expansive new Howard Hughes Medical Institute at the Janelia Farm research campus, just outside of Washington D.C. Architects envisioned a unique "bent-wood" wooden bench in the middle of the facility's main auditorium, spanning the room's width with three sections curving along behind the traversing aisle.

With so much work moving through Jefferson's shop at the time, the bench was subbed out to not one but two different contractors, neither of whom could devise a way to build the complex seating sections.

Interns Hartman and Larson saw an opportunity to solve the problem with fellow students in Pitt State's SAW (Society of Architectural Woodworkers) club.

"We've got a group of guys that are excellent woodworkers, and we take on a job or two every year to pay our way to the woodworking shows," says Hartman. "Jefferson said, 'Give us a mockup and we'll go from there.'

"After a bit of trial and error, we came up with an approach that worked. We started with sheets of ½-inch MDF, which we scored two-thirds of the way through at eighth-inch intervals with our beam saw. We laminated a phenolic sheet – HPL (high pressure laminate) without the decorative layer – onto the scored side of the panel, and glued veneer on top of that.

"Then we flipped the panel over, laminated phenolic and balancing veneer on the other side, and scored through to the MDF core to make the panel flexible enough for the back-and-forth curves the architects wanted."

"We used 3D modeling in AutoCAD to determine the geometry for cutting the panels to fit together over the substructure on site, and cut them to dimension on our CNC router," says Larson. "We first tried to apply the veneer directly to the MDF, but found that the veneer alone telegraphed the kerf cuts on the MDF when the panels were flexed."

The end result is stunning – sleek seating with compound curves that looks moulded from sheets of solid wood. ■

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Today, Janelia Farm is a fully functional medical research complex. And as science changes, the buildings can adapt to meet the continually changing demands of future research. "All aspects of the research center – the programs, the people, the design of the buildings and infrastructure – are planned to stimulate the multidisciplinary, team-driven research needed to advance biomedical science."

Founded in 1953 by Howard R. Hughes, HHMI is one of the largest philanthropies in the world. Since its inception, HHMI has focused almost exclusively on supporting the work of individual biomedical investigators at academic research labs in the US and throughout the world. Although the Institute has often given grants to construct advanced research facilities at other institutions, the Janelia Farm Research Campus is HHMI's first wholly-owned and operated lab. Its mission – to provide Institute investigators with an intensely collaborative environment in which to create and disseminate the advanced research tools needed for biomedicine in the 21st century – is felt in every aspect of Janelia Farm's architectural design and structure.

It remains to be seen what will emerge from Janelia Farm. But the entities who collaborated on the project – including Rafael Viñoly Architects, Great Lakes MDF, Indiana Architectural Plywood and Monarch Industries – are gratified to think that the architecture of the institute may actually influence some of the world's most important scientific research and discoveries. ■

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