First Tech Federal Credit Union:
The Building That Wanted to Be Mass Timber

Greenery and exposed wood in the common area for credit union employees lends an inviting, natural feel.
All photographs by Mike Brewington for Swinerton Builders

When First Tech Federal Credit Union set out to build new corporate offices in Hillsboro, Oregon, the leadership team had no preconceived notion about what the building should look like or how it should be built.

During the early visioning sessions among the owners, architects, engineers and builders, three criteria rose as the primary design principles:

- **“People First”**: It needed to be a place that would encourage the health and well-being of employees, help attract and retain talented people and reflect Pacific Northwest values.
- **“The Building is the Park”**: Consistent with surroundings, it needed to engage the park and trees that encircle the building’s site.
- **Fiduciary Responsibility**: It needed to demonstrate the not-for-profit, member-owned credit union’s financial stewardship.

During the project kickoff and visioning session, as the team discussed design and construction options that fit within those criteria, the architect’s design lead leaned over to the builder’s preconstruction manager and said, “This building wants to be mass timber.”

“Everybody loves wood.”
— Scott Barton-Smith, Hacker Architects
COORDINATION AND PREFABRICATION HELP MASS TIMBER PENCIL OUT

The five-story, 156,000-square-foot building ended up with cross-laminated timber (CLT) roof and floors and simplified support for the exterior façade. Glued-laminated timber (glulam) was used for the post and beam frame and columns.

While Portland-based Hacker Architects had used glulam beams for decades in western Oregon, the use of CLT was relatively new. They had been looking for the right opportunity to use it, consulting with WoodWorks – Wood Products Council.

Swinerton Builders was tasked with demonstrating to the owners that they could save time and money using mass timber over a conventional structural steel frame.

“We allowed steel to compete with mass timber throughout the evaluation,” said William Silva, Swinerton preconstruction manager. “From time to erect, fireproofing, foundation systems, and other criteria, wood came out on top every time.”

Using wood, prefabrication and a coordinated team approach resulted in 4 percent cost savings and four fewer months of construction over the use of steel.
APA Case Study: First Tech Federal Credit Union

BUILD FASTER, SAFER, QUIETER AND LESS EXPENSIVELY WITH PREPLANNING

The owners liked the idea of wood and the way it would reflect a warmth in the work space, promote health and well-being and feel natural and consistent with the park outside the floor-to-ceiling windows, but they wanted a clean look without visible mechanical systems. That meant more than 4,200 mechanical, electrical and plumbing penetrations in the CLT.

A virtual model of the entire First Tech project was built before construction started. Structurlam, the CLT and glulam manufacturer based in Penticton, British Columbia, partnered with Kramer Gehlen & Associates (engineer of record), Equilibrium Consulting and MyTiCon to implement a hidden connection design. Pre-engineered connectors were installed and all utility penetrations were cut at Structurlam's facilities. All the components were delivered to the construction site as ready-to-assemble prefabricated parts.

The columns and panels snapped together on site with hidden connectors, and the utilities are hidden under a raised floor, leaving a clean design that draws the eye to the wood and windows.

The preplanning and offsite hole-drilling made the onsite construction faster, safer and quieter. No saws for field cuts. No drills for mechanical and electrical penetrations. No truck back-up alarms. Just a small crew with a crane. The five-story building was phased so the tradespeople could work consistently from one end of the building to the other as the floors, walls and roof took shape.

“Passersby would ask where all the workers were,” said Zach Davidson, P.E., S.E., the project’s Kramer Gehlen & Associates senior engineer. Construction for the largest CLT structure so far in the U.S. took 14 months total, with only 12 weeks needed for the timber erection.
PEOPLE AND PLANET BENEFIT

Visitors to the site often felt compelled to touch the exposed wood grain and joints while touring the construction—something you don’t see in steel or concrete buildings, Swinerton’s Silva said.

“It was exciting bringing the owners through the building,” said Scott Barton-Smith, AIA, LEED AP BD+C, a Hacker Architects associate. “There were broad smiles on everyone’s faces. It strikes you—not only the novelty of the new building designed just for you, but the materials. Everybody loves wood.”

The “people first” principle that drove the First Tech Federal Credit Union leadership team also benefited the environment. In addition to a beautiful, comfortable space that sits lightly in its park setting, the Sustainable Forestry Initiative (SFI) timber used in the building provides renewable advantages over more traditional steel or concrete structures. Silva estimated that it would take Oregon only 46 minutes to regrow the amount of wood used in the building.

Trees store carbon as they grow, and the resulting wood isolates it long term. Engineered wood uses less energy and emits less greenhouse gases than steel or concrete during manufacturing, resulting in a greener footprint. Silva estimated that First Tech’s corporate offices sequestered 4,192 metric tons (4,621 U.S. tons) of carbon and avoided 1,622 metric tons (1,788 U.S. tons) of greenhouse gases that would have been emitted through steel manufacturing and construction. That’s equivalent to removing 1,229 cars from the road for one year.

“The wood building is at home on that site,” said architect Barton-Smith.