



After the mass timber trade partner went out of business, Hoffman was able to keep the project moving by leveraging its pool of 100-plus carpenters to take over installation of those components. Photo by Adam Hunter/LMN Architects

UW's first mass timber hall

■ The project team overcame challenges associated with the pandemic and the bankruptcy of the mass timber trade partner.

By **BOB VINCENT**
Hoffman Construction

Founders Hall, the first mass-timber building on the University of Washington campus, greatly enhances the capacity of the Michael G. Foster School of Business. Leveraging UW's progressive design-build delivery model, Hoffman and our design-build partner LMN delivered a learning facility that cultivates diverse student-facing programs to further the school's interactive culture of learning, strategic thinking, and entrepreneurial initiative.

The success of Founders Hall was a direct result of a collaborative design-build process, our integrated teams' joint response to challenging circumstances affecting the project, and perseverance through the COVID-19 pandemic.

INTEGRATED DESIGN-BUILD TEAM

A successful design-build team begins with collaboration and finding partners with the right temperament, teamwork skills, and technical expertise. In collaboration with the Foster School of Business, Hoffman, LMN, and our design and trade partners took focused time during the early project definition phase to establish UW's expectations and measures of success for design-build team dynamics, and to clearly articulate the project's goals. These goals became touchpoints for design decisions and were revisited at the start of each design presentation and project management meeting.

Our early visioning exercises proved instrumental in achieving



Mass timber is on full display inside Founders Hall.

Photo by Marissa Lordahl/Hoffman Construction

the project goals of significantly increasing building performance, and exceeded the client's sustainability goal of being one of the greenest buildings on the UW campus. The design provided a 22% reduction of energy use, a 58% reduction in embodied carbon, and zero fossil fuel use.

Working toward a more inclusive culture. To further the UW's efforts to become a more equitable organization, the design-build team continually strength-

ened stakeholder relationships based on shared goals and values around diversity, equity, access, and inclusion throughout the project. In consistently promoting a culture of respect, transparency, and accountability, we reached 28% Business Equity Enterprise participation and exceeded the university's BEE goal by 8%.

Risk-reward partners. Hoffman and LMN signed the con-

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Founders Hall underscores the beauty and economy of sustainable design and the highly social character of business in the new century. Photos copyright Tim Griffith

Founders Hall — A model for the next century of campus building

■ The building incorporates a mass timber structure with CLT decking.

By **ROBERT SMITH** and **KATE WESTBROOK**
LMN Architects

The Foster School of Business at the University of Washington is one of the oldest and most prestigious business schools in the Pacific Northwest, with a history that dates back to 1917. Over the past two decades, the business school has partnered with LMN Architects to reimagine its campus, designing an interconnected set of spaces that both foster the growth of a social ecosystem within the school and support its unique pedagogical goals.

The newest addition to the Foster School of Business complex is Founders Hall, located in the historic heart of UW — Denny Yard. The building is the first UW campus building to fully utilize a mass timber structure, showcased in the central staircase that spans all five floors. The new Founders Hall, designed by LMN Architects, is a hub for entrepreneurship, innovation, and networking on campus and houses classrooms and student-serving program offices.

Informed by post-occupancy studies of PAC-CAR and Dempsey halls (LMN's first two building designs for the campus development),

the new Founders Hall prioritizes spaces that successfully translate into valuable learning, social, and networking connections for students, alumni, and the greater Foster School community. The building contains two tiered classrooms, designed to accommodate either 135-seat or 65-seat classes, that can support case study analysis and team-scale breakouts within the classroom.

In addition to two flexible tiered classrooms, the new building houses lounges and informal seating areas for students to study and socialize, along with dozens of team and conference-sized meeting rooms that model the types of settings and interactions the students will encounter in their professional life. Flexible program offices are located on each floor, opening directly to student-focused areas and encouraging interaction between business school faculty, staff and students. This ethos of connection is exemplified by the mass timber staircase that rises through the heart of the building, where students can stop for spontaneous interactions while looking back at the other pieces of the Foster School of Business complex through the five-story windows.

The use of mass timber has many advantages: it reduces the embodied carbon of the structure, obviates the need for added fire protection or applied finishes, and brings biophilic benefits such as stress reduction, improved

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Founders Hall is the first UW campus building to fully utilize a mass timber structure, showcased in the central staircase that spans all five floors.

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VECA is proud to partner with the University of Washington and Hoffman Construction to bring Founders Hall to UW and the surrounding community.

Thank you to everyone that worked on this project, from our highly skilled electricians to our trade partners. We're proud of the work you do.



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Mass timber

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tract agreement at the outset to join as risk-reward partners, working together for mutual benefit and aligning the interests and goals of the university and all design-build partners. As the project gained momentum and team chemistry and dynamics took shape, the design-build team strategically engaged consultants and trade partners who embraced the risk-reward principle and strengthened the team by integrating their expertise in the development of Founders Hall.

The design-build team included MKA, PAE, McKInstry, VECA Electric, Herzog Glass, Hoffman Structures Inc., Pellco Construction, Performance Contracting, and Steelkorr. Each partner shared the risk for the project and shared the collective goal of successfully delivering the completed project as it was envisioned for the client.

ADAPTING TO COVID

The emergence of COVID-19 presented the team, trade partners, and the UW with new challenges as many companies were forced to work in a remote environment for the first time. Collectively, our project team understood we had a responsibility to achieve the common goal of keeping the site safe. The design-build team had to effectively move the project forward in the virtual environment while maintaining a continuity of our established culture of respect, transparency, and accountability.

By taking specific actions to support a distributed workforce, the project maintained the trust, performance output, and engagement of the whole team. After establishing the revised reality as a group, leadership personnel upgraded communication tools and techniques to better inform virtual members. Weekly team meetings encouraged shared leadership among team members. With guidance from the university, alignment audits were performed to ensure all members were committed to the project values and goals. Each of these steps started with the realization that delivering the project and working as a team would be different with members dispersed.

Construction supply chain issues. The pandemic also caused product shortages, delayed deliveries, and halted production in 2020. Early in the project, prior to COVID-19, the design-build team had emphasized to our trade partners, subcontractors, and the client that procurement issues are a reality. Managing the pandemic's disturbances required a re-emphasized, multi-pronged strategy, including identifying new supplier networks, reassessing existing distribution channels, and leveraging technology for accurate demand forecasting. We created a rigorous forecasting plan to give the entire project team visibility into the impacts of labor constraints, demand uncertainty, and supply shortages. To get materials on time, we made the decision to procure mate-

rials early and pay for storage, rather than risk potentially delaying the schedule. The project was delivered for start of fall quarter 2022 despite the challenges.

MASS TIMBER TRADE PARTNER BANKRUPTCY

Hoffman's self-perform capabilities allowed us to shield the university from significant loss and keep the project on track when our mass timber trade partner declared bankruptcy in the middle of the project. As the project was midway through mass timber installation, this was potentially a catastrophic hit to the project. Hoffman took immediate action, securing the already-fabricated columns and mass timber panels from the supplier's factory in eastern Washington in less than three weeks and beginning to source an alternate supplier for the remaining panels.

Leveraging relationships with every mass timber supplier in North America, Hoffman identified two suppliers that could produce the exact profile of the previously installed mass timber. Having installed wood up through the third floor of the building and setting the concrete elevation on the classroom side, the design and depth were solidified with no room for change or error.

While the new supplier fast-tracked production of the mass timber panels, collaboration with subcontractors redirected efforts to other vital areas of the project schedule to keep project momentum.

Hoffman's structural self-perform company, Hoffman Structures Inc. (HSI), was able to leverage its pool of 100-plus carpenters to take over the installation and keep the project moving forward. Hoffman also hired former employees of the supplier to ensure a smooth hand-off for installation. HSI was able to begin installing mass timber panels from the new supplier within just 11 weeks of learning of the supplier's bankruptcy.

By implementing UW's progressive design-build delivery model and working through the challenging circumstances of a trade partner bankruptcy, and navigating an unprecedented pandemic, the University of Washington, Hoffman, and LMN successfully envisioned and delivered an interactive learning environment focused on cultivating diverse student-facing programs specifically designed to support the school's entrepreneurial culture, strategic thinking, and active learning culture. Founders Hall will undoubtedly inspire future generations of business leaders for years to come.

In his 27 years at Hoffman, Bob Vincent has provided leadership on many of the firm's most challenging and groundbreaking projects, including multiple projects at the University of Washington, the iconic Seattle Central Library, and the recent Century Project Space Needle renovation.



The new building uses energy-saving passive heating and cooling strategies.

Photo by Marissa Lordahl/Hoffman Construction

Delivering campus energy and carbon savings 14 years ahead of schedule at UW Seattle

■ *Founder's Hall is designed to achieve a 79% reduction in energy consumption over the first 60 years of its life.*

By **KATRINA EMERY**
and **SARAH FISCHER**
PAE

The University of Washington relies on its 2020 Sustainability Action Plan for campus planning, which has committed to reducing greenhouse gas emissions by 45% by 2035, among other essential targets. As a replacement for an older 1960s building, the new Founder's Hall needed to be highly sustainable to fit into a new campus plan for the future of the UW. PAE's vision for the project was one that could contribute to the overall goal of energy and carbon reduction and future-proof the design. As a result, Founder's Hall is designed to achieve a 79% reduction in ener-

gy consumption over the first 60 years of its life.

"When we first started on the project, we needed to balance the UW building standards with the project needs: to fit within the budget, allow the maximum program area as possible, offer ongoing low maintenance, and more," says Allan Montpelier, PAE principal.

The mechanical and electrical engineering design was a fine balance of overarching needs that demanded vision and a steadfast team to pull it off, which Founder's Hall had in spades. One of the strategies that PAE acted on was putting priority investment in the elements of the building that had the most staying power. Future renovations

might change walls and mechanical and electrical systems, but the building's envelope and structure will remain constant, so the team invested in those as much as possible to get the best performance.

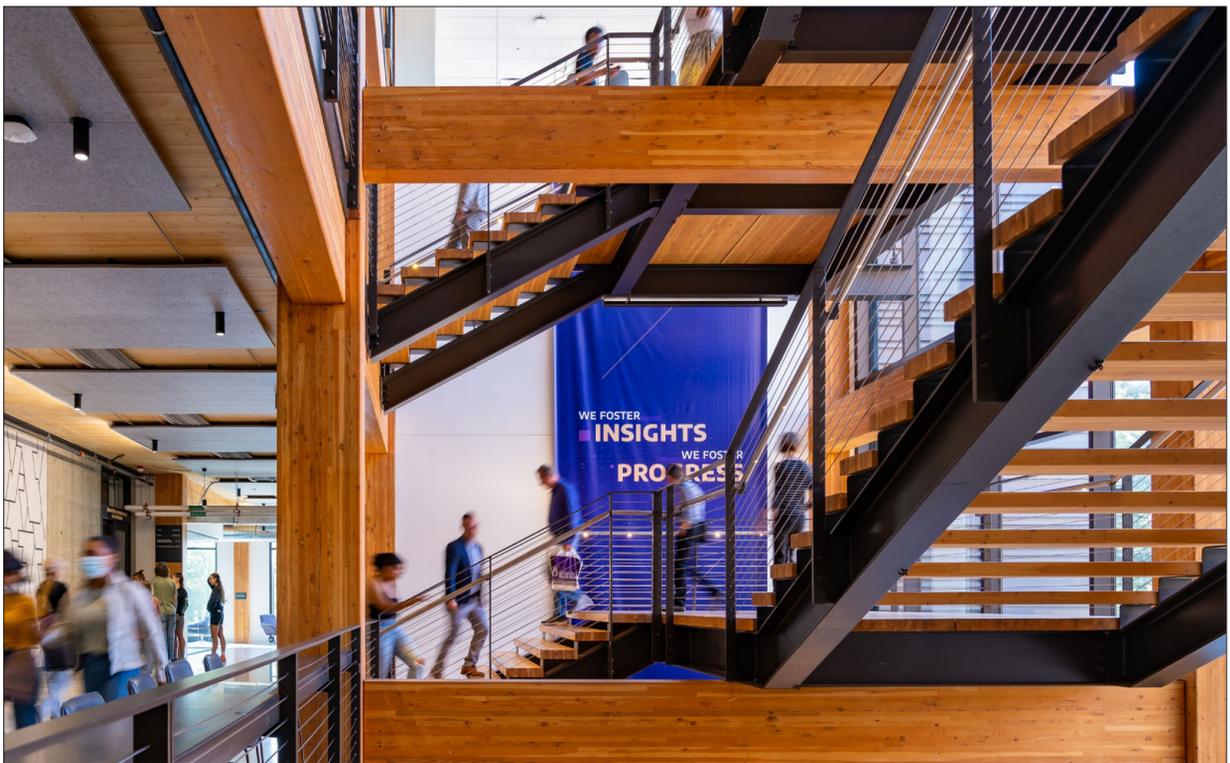
As the first project on campus to use cross-laminated timber (CLT), the wooden beams helped create a sturdy structure that locks in carbon, while also offering higher floor-to-ceiling heights for easier mechanical system installation.

For the building envelope, the solution was a high-efficiency envelope that allowed for passive house design strategies in the main wing. By investing in a tight envelope that performed extremely well, the team could reduce cooling or heating needs to such a degree as to be able to use an electric resistance heating solution through baseboard heaters along the perimeter. While electric heat is admittedly not as energy efficient as a heat pump,

by putting more investment in the envelope the team could cut down on how often the heat was even used. This helped to reduce the overall carbon footprint. To put it more simply: It is very efficient if it is not on.

Further passive strategies included proper ventilation and air recovery, with a highly efficient DOAS (dedicated outdoor air system) rooftop system that captured 90% of the energy being exhausted in the building, which dramatically impacted the energy savings. Operable windows and internal shades were key to offering tenants control, helping to increase comfort range. In a typical office building that has no operable windows, around 80-90% of people will feel mostly comfortable. Amazingly, that last 10-20% can be reached simply by giving occupants the option of

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Congratulations to the University of Washington and the Michael G. Foster School of Business on the opening of Founders Hall!

Hoffman is proud to have teamed with LMN Architects to deliver this transformative, inspiring, and sustainable new facility.



Congratulations to the UW Founders Hall Team on this celebration of learning, sustainable design, and our native northwest landscape.

We are proud to have collaborated with this team.

For more than 15 years- Mayfly has been providing civil engineering services- from planning through construction administration- for projects that are sensitive to both their social and natural environments.



Model

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cognitive performance, and enhanced moods. The building incorporates a mass timber structure with cross-laminated timber decking, reflecting the Foster School's connection to the local wood products industry while reducing the building's embodied carbon by almost 60%.

Reinforcing the Northwest character of the UW campus, the design team ensured that the adjacent grove of native Douglas fir and sequoia trees would not only be preserved but also integrated into the physical experience of the building. The peeled-away brick facade paired with carefully placed glazing reveals the timber inside the building while providing views of the historical Douglas firs, giving the higher floors of the building an immersive experience with the Northwest forest canopy of the campus.

Along with a focus on sustainability, the design of the building provides business students with the opportunity to connect with their peers, Foster School of Business alumni, and the greater business community. The classrooms, conference facilities, and recruiting spaces offer expanded opportunities to host events for community and corporate engagement. A rooftop terrace features impressive views of Denny Yard, the Quad, and Mount Rainier, providing a premiere backdrop for events.

The exposed timber in the interior of the building gives the space a warm and inviting ambiance, reinforcing the building's purpose in forging new connections between students and beyond. Founders Hall quickly became one of the most in-demand spaces for work and study even before its official opening this month. Faculty and staff began using the building's offices and meeting rooms as soon as the structure completed construction. While UW's expansive campus does not lack student study spaces, the warm timber interior, stunning campus views, and spacious social areas attract students from all over the university.

Founders Hall is designed for resiliency with efficient floorplans, flexible for reconfiguration, and use of durable materials. While engineered mass timber structures are gaining attention as an innovative, sustainable alternative to conventional concrete and steel structures, they harken back to the long history of heavy timber structures in the Pacific Northwest that give a sought-after character to many of Seattle's most historic buildings. The naturally daylighted and ventilated office areas can be easily reconfigured from open-office layouts to enclosed offices as needs change; multiple reception spaces on each floor also allow for changing department sizes over time. The two classrooms can host a range of classes from large lectures to smaller seminars, and can adapt to different pedagogical styles, including a range of active learning modes. The highly insulated envelope and all-electric mechanical systems are resilient for increasing temperatures and our global transition away from fossil fuels.

As the Foster School of Business's needs evolve, Founders Hall will be able to accommodate those changes for generations to come.

Founders Hall is the latest addition to the Foster School of Business complex of buildings on campus, with the intention of being a center of business student activity and networking. The building underscores the beauty and economy of sustainable design and the highly social character of business in the new century.

Kate Westbrook creates publicly engaged and highly sustainable architecture, integrating emerging technology in design, fabrication, and analysis with attention to how environments influence the human experience. Robert Smith is passionate about higher-education projects, working closely with universities' stakeholders to determine pre-design metrics for benchmarking, project visioning, programming, design, delivery, and three post-occupancy evaluation studies.

Energy

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pushing a button to open a window or turn on a fan. This allows for a higher range of acceptable temperatures, and therefore a lower energy usage to heat or cool a given space.

A unique aspect the team undertook for the project was using the Target Performance Path to comply with the city of Seattle's energy codes. Only a few projects in the Seattle area have pursued this method, as opposed to the Prescriptive Path, which lays out specific systems to use. The Total Performance Path allows building systems to be designed however the team would like, provided the Energy Usage Intensity (EUI) falls below a certain threshold after a 12-month period. If it doesn't reach the target, the project can be fined based on square footage.

While riskier if the EUI is not reached, the strategy meant that the team could pursue simpler mechanical systems and a less complicated install. PAE felt confident it could reach that lower EUI, and with buy-in from the university, LMN Architects, and Hoffman, it set out to coordinate the system to ensure the end result.

"It was not an obvious choice," says Mike Smolkowski, PAE project manager. "Only a few projects have gone down that path, we might have been the third or fourth, but we were very confident from our energy modeling and analysis that we could make it work."

PAE's regenerative design lead, David Mead, led the modeling and analysis of the building, and credits the entire team for believing in the project. "It is a real success story from an integrative design standpoint. It is one of the more collaborative projects I have been on, and it really stands out for the integrative process."

During the schematic design phase, the analysis the regenerative design team provided was invaluable in helping demonstrate how the university could hit its energy goals. The team worked closely with LMN and even created a new tool for analysis, the Parallel Coordinates Tool. Based on energy load calculations, the tool runs through thousands of iterations to reach the ideal targets for performance, which then allowed the team to identify gaps in its designs. By translating that into clear targets for passive heating and cooling, the tool helped set the energy target and create models to achieve it.

"It was a very smooth process working with the regenerative design team and getting the models," says Smolkowski about the process of designing based on building analysis and models. "We would update energy loads, talk through glazing percentages, get the results from the analysis, and update the design until it was where we needed it to be."

Using the Parallel Coordinates Tool, the team was able to offer UW a clear demonstration of how it could reach the target sustainability plan emission goals, even across the entire campus. The university has hopes of reducing carbon emissions overall, but it also needs to build more buildings, which adds more square footage and more carbon. Rather than focusing on renovating older buildings to reduce carbon, Founder's Hall demonstrates that new buildings can offer a substantial carbon savings by hitting, or becoming close to, net-zero carbon.

Now that Founder's Hall is open, the proving period of operation begins in order to assess EUI. "From a perspective of how the building looks, it is amazing," says Mead. "The reality is that we won't know the success from energy until a year or so under our belts. So far, it is looking very good."

The team has confidence in its design. "It is a huge success from a carbon sequestration and footprint standpoint," points out Montpellier. "We have the balance of usable space and integration of systems correct, in my opinion."

With energy-saving passive heating and cooling strategies, carbon-sequestering CLT, and a long-lasting beautiful design, Founder's Hall demonstrates how a campus with robust sustainability goals can be achieved with a dedicated integrative team and clear energy targets.

Sarah Fischer is the marketing communications manager at PAE, where she creates compelling narratives and brand experiences to help achieve the firm's vision to solve the planet's energy and water challenges. Katrina Emery, marketing communication specialist at PAE, has been in the AEC industry for 10 years, and is an author with a guidebook on the historical Oregon Trail.

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