

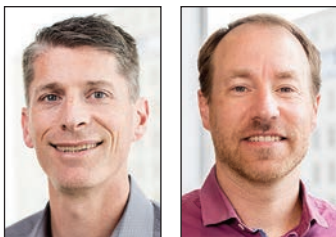
Western Washington University's first progressive design-build project eliminated traditional concrete elements, using a variety of mass timber applications instead. Each section of the complex features a different framing system that creatively responds to different programming needs.



PHOTO BY BENJAMIN BENSCHNEIDER

# INNOVATING STUDENT HOUSING WITH MASS TIMBER AND RAIN GARDENS

Intentional design and conscientious engineering that respects student involvement and community building can produce impressive tangible impacts.



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Higher education institutions have always needed to intentionally create community, and even more so after the pandemic. Student housing is vital to this effort, and we see innova-

tions championed by design-construction teams and students as beneficial to the evolving role that campus housing can play.

## MASS TIMBER COMES TO STUDENT HOUSING

Designed by Mahlum Architects, the 400-bed Alma Clark Glass Hall is named for the first Black woman to study at Western Washington University who eventually became a founding member of the Seattle chapter of the National Association for the Advancement of Colored People and a librarian for the Seattle Public Library system. Her namesake is a 117,340-square-foot building featuring a central main floor hub with a

community kitchen and lounge, a large multipurpose room, and a reflection space, in addition to student housing levels above.

For a building of this size, the simplest way to design the first level is with concrete columns, shear walls, and a transfer slab overhead to support the four levels of light wood-framed units above. However, knowing the many benefits of mass timber, we leveraged the progressive design-build delivery model with Lydig Construction and Mahlum to devise an innovative mass timber transfer level instead. We eliminated all traditional concrete elements, replacing them with glulam columns and beams, a CLT diaphragm, and steel braced frames.

However, while mass timber markedly improves student living experienc-



Students at Bellevue College funded an extensive rain garden system that includes cascading bioswales designed to provide a visual demonstration of sustainability, and educational and therapeutic benefits to students.

PHOTO BY LARA SWIMMER

es, integrating it requires expertise and coordination. We worked closely with Mahlum to design needed fire resistance ratings for all mass timber elements and their connections. Knowing that some of these elements require more lead time, we provided an early procurement package to help Lydig avoid potential schedule impacts. These steps created a win for students and the university: the aesthetic and biophilic benefits of exposed wood, and significant embodied carbon reductions, all without exceeding project funding.

## TREATING STUDENTS WHILE IMPROVING SUSTAINABILITY

Bellevue College's Residence Hall is their first on-campus living option in a LEED Platinum building. The 350-bed residential community emphasizes student experience and sustainability, featuring a public main level lounge with a café and multi-purpose meeting space, private study areas and lounges on floors above, and a one-of-a-kind, accessible courtyard with an amphitheater and extensive rain gardens.

The residence hall represented an opportunity for our civil team to align the design for this project with the college's plans for future development: an access drive including pedestrian-friendly improvements to connect north cam-

pus to the main campus, a sewer main positioned to link sewer connections from future buildings, and incorporation of an existing high-capacity stormwater system to mitigate runoff from this and future developments.

Students led the innovation by lobbying for a sustainability fund that would add impressive rain gardens in the courtyard. Rather than follow the conventional choice of standard landscape areas and plantings and recognizing the students' desire for the rain garden feature, this initiative became one of our engineering goals, too.

We intentionally designed a comprehensive rainwater management system with the student-led initiative's success in mind. Knowing it would require additional funding, we also formulated a contingency plan of standard plantings in case funding was unavailable.

Ultimately, the students were successful and funded seven rain gardens. In partnership with the landscape architect Communita Atelier, the sloped plaza incorporates specific soil mixtures, local and edible plants, drought- and wet-tolerant plantings, site walls to create ponding areas for the rain gardens, and pipes and drains that fulfill expanded stormwater system requirements.

Roof and plaza runoff discharge to the top rain garden, then cascade to lower gardens. This plaza enhancement was realized thanks to extraordinary student

initiative and coordination between our civil team and the college, the architect NAC, the GC/CM partner Walsh Construction Co., and Communita Atelier.

Intentional design and conscientious engineering not only respect student involvement and community building but also produce impressive tangible impacts.

At Bellevue College, a sustainable landscape area captures rainwater to feed a lush environment and in turn enhances the living experience in the residential courtyard. This also beautified the ADA ramps and stairs needed to provide equitable access to all while enhancing the ground-level perspective of the building.

At Western Washington University, mass timber design elements respond to the university's high sustainability goals and elegantly echo the naturally forested campus landscape. Proud partners of these project teams, we hope both will support their communities for years to come as we continue to look for ways to innovate in future higher education projects.

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