

STEPHEN E. EPLER HALL PORTLAND STATE UNIVERSITY

- > CREATE AN EFFECTIVE LEARNING AND LIVING ENVIRONMENT, EMPHASIZING STUDENT HEALTH AND SUCCESS AS PRIMARY GOALS
- > INTRODUCE NATURAL DAYLIGHTING FOR STUDENT USE THROUGHOUT THE BUILDING
- > IMPLEMENT INNOVATIVE RAINWATER REUSE STRATEGIES TO CONSERVE WATER
- > SPECIFY EFFICIENT HVAC SYSTEMS, INCLUDING HEAT RECOVERY
- > ACHIEVE LEED® CERTIFICATION



New student housing concepts & university traditions

Portland State University has grown from a two-year college, founded in Vanport in 1946, to Oregon's largest and only urban, public university with nearly 23,000 students. This new student housing facility is named in honor of Dr. Stephen E. Epler, the original head and champion of Portland State University. The building is 62,500 SF, and houses 130 student units, classrooms, and academic office space.

In developing a new student housing facility for the university, the design team, headed by Mithûn (architects) of Seattle, also incorporated innovative, environmentally sound concepts in order to create a healthy living space for students choosing to live on-campus. The building has recently been LEED Certified by the US Green Building Council.

Sustainable design elements

While the roots of Epler Hall reach back into the university's early days, the design techniques employed were innovative, forward thinking, and environmentally conscious. The Interface Engineering team was selected by Mithûn specifically for their award-winning work on the Jean Vollum Natural Capital Center, the first LEED Gold Certified building in the western United States. The team was able to incorporate a mix of sustainable, efficient, and productivity enhancing systems into the project. According to Mithûn principal Ronald van der Veen, AIA, the Euro-style units were designed to be ultra-efficient, needing little more than a light bulb and a computer to heat them in all but the coldest weather. Below are some of the systems and processes that the teams at Interface and Mithûn were able to employ:

Reduce, Reuse, Recycle

The original Birmingham student apartment building on the site, housing 13 units, was constructed in the early 1900s and was inadequate to meet the housing demands of the growing university. The building was carefully deconstructed, allowing for 90% of the building's materials to be reused or recycled. The new Epler Hall was then constructed on the footprint of the original structure. The stairs in the new hall were constructed using old-growth timber from a 19th century distillery, and environmentally friendly wheat board, a rapidly renewable material, was used to construct the kitchen cabinetry.

Better Lighting for Better Grades

Epler Hall is designed to use as much natural light as possible. The studio units on the west side of the building feature floor-to-ceiling windows, and were the first to be rented. Because studies have shown that higher percentages of natural light contribute to increased productivity, this design element was key in creating a housing facility that would contribute to each student's academic success.

FAST FACTS

Location

Portland, Oregon

Architect

Mithûn Architects

General Contractor

Walsh Construction

Completed

August, 2003

Construction Cost

\$7,400,000

Size

62,500 SF

Awards

LEED Certified, US Green Building Council

Associated Builders & Contractors, Pacific Northwest Chapter, 2004 Excellence in Construction Award



Innovations in Storm Water Management / Rainwater Reclamation

Interface was integral in the design of the rainwater harvesting system that is built into the landscape. The system was designed to divert 26% of storm water from Epler and neighboring King Albert halls. Rain from the buildings' roofs is diverted to collection areas via "splash boxes" in the public plaza, creating a water feature for the building. The water flows to underground retention tanks, and is treated using ultraviolet light before resurfacing for use as flush water in first floor restrooms and in landscape irrigation. The university expects to harvest 230,000 gallons per year from this system. In addition to its functionality, the system is designed to be interactive and interesting to the public, demonstrating the creative, environmentally friendly options available in sustainable design.



Innovations in Efficient HVAC and Plumbing Systems

Many facets of the mechanical and plumbing system designs are geared toward energy efficiency, in addition to the rainwater harvesting system. Interface's engineers also specified low-flow plumbing fixtures for the building, including 1.0 gpm lavatory faucets, 2.0 gpm shower heads, and 1.44 gallon-per-flush commodes, which use 10% less water than the existing low-flow standard. Both aspects contribute to the building achieving water usage more than 30% below that of a similar, conventional building.

Energy savings were achieved by employing a variety of design techniques. No cooling systems were installed upstairs, and mixed mode natural ventilation was used for first level offices and classrooms, with night cooling of the building mass. Sunshades were installed to aid in cooling the building during summer months, as was a "solar chimney", designed to naturally draw hot air out of the top of the building. The heat recovery system at shower drains aids in pre-heating water for the building, and high efficiency water heaters were specified. Heat recovery at the restroom exhaust aids in heating outside air for ventilating the corridors. Incorporating these systems created a 35% reduction in total energy usage vs. the 2001 Oregon Energy Code.

Lasting Benefits

The design team succeeded in their goal of creating a new kind of student housing with a greener, more environmentally conscious choice for living quarters through the use of sustainable design concepts, like using recycled materials, integrating natural and artificial light, employing high-efficiency HVAC and plumbing systems, and through innovations in stormwater management. What they have created is a new paradigm for university housing and an environment designed to enhance student achievement and comfort.

In business for more than 35 years, Interface is a large, full-service commercial mechanical and electrical engineering firm headquartered in Oregon. With approximately 115 employees, Interface has offices in Portland and Salem, Oregon; Kirkland, Washington; and Sacramento, California. Interface's significant specialty practices include sustainable design, energy conservation, lighting design, building commissioning, fire/life safety systems, code consulting and data/telecommunications systems.

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