



LEED Silver

Stephen E. Epler Hall at Portland State University

PORTLAND, OREGON

Services

MEP Engineering
Sustainable Design
Fire/Life Safety

FAST FACTS

Architect

Mithun Architects

General Contractor

Walsh Construction Company

Completion

August 2003

Building Size

62,500 sf

Project Cost

\$10 million

Awards

BEST Award for Stormwater Management: Portland Office of Sustainable Development, 2005

Best New Green Construction: Hunter-Davisson Inc., 2004

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

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Contact

Ron Van der Veen,
Principal / Mithun
Partners / 206.623.3344

Addressing the needs of a growing young student population, Portland State University added a building named Stephen E. Epler Hall in 2003. A mixed-use structure, it provides 130 student apartments, ground floor office space and three classrooms. Originally expected to use energy 35 percent below Oregon code, Epler Hall earned the prestigious LEED Silver award. Now, however, a recent post-occupancy evaluation has shown that the building is performing well below the original estimate, with 48 percent less energy use than a similar building constructed to Oregon code.

According to Mithun principal, Ron Van der Veen, "None of the systems in the building are particularly exotic or costly. It comes down to smart design rather than expensive components." The smart design was provided by Interface Engineering including electrical, mechanical, plumbing and fire/life safety in the form of:

» **Cooling with Natural Ventilation.** No cooling systems were installed upstairs, with each apartment outfitted with operable windows. A mixed-mode natural ventilation system was used for the first level offices and classrooms where ventilation shafts lead to wind cowls on the roof. If a window is opened, a draft is created that draws the air naturally throughout the room, up the shafts, and out the building at the roof level. Sunshades were installed to aid in cooling the building during summer months.

» **Daylighting.** Epler Hall's orientation results in minimal external exposure to the sun. A shaded plaza located between Epler and an adjacent building serves as a cool air reservoir. The West side of the building has deciduous trees that extend

to the top floor, providing shade in the summer. External light shelves above the apartment windows on the West and South sides of the building block direct exposure to the sun, but permit light to enter during the winter months.

» **Efficient Heating.** The small size of the well-insulated studio apartments (12 by 20 feet) enables them to be heated very efficiently. According to Francis McBride, supervising architect in the university Facilities and Planning Department, "One person, lights and a computer can truly heat a room".

» **Heat Recovery.** Waste heat is recovered from each apartment's toilet exhaust and then run through a heat recovery unit on the roof that preheats ventilation air supplied inside the building. This reduces the ventilation air heating load, which is a large portion of a residential building's energy use.

» **Storm Water Management/Rainwater Harvesting and Plumbing Innovations.** The rainwater harvesting system was designed to divert 100 percent of storm water from Epler Hall's roof. The water flows to a bio-pond/filter, then to an underground storage tank. It is then treated using ultraviolet light, and resurfaces for use as flush water in the first floor restrooms. Raw rainwater is used for irrigation. Low flow plumbing fixtures were used throughout Epler Hall, so water usage is 30 percent below that of a similar, conventional residential building. The goal of the rainwater catchment system is to have no discharge to the city's system.



Epler Hall is performing well below the original estimate, with 48 percent less energy use than a similar building constructed to Oregon code. (Right) Interface Engineering designed a rainwater harvesting system which will divert 100 percent of storm water from Epler Hall's roof. The water flows to a bio-pond/filter, then to an underground storage tank. The goal of the rainwater catchment system is to have no discharge to the city's system.

