

## CASE STUDY



*Award-Winning Seminar II complex at Evergreen State College uses concrete to minimize construction materials, maximize value*

The Evergreen State College, located on an idyllic, forested campus in Olympia, Washington, had not had a significant new building since the early 1970s. That changed soon after the school's 1998 challenge to Anne Schopf, AIA, of Seattle-based Mahlum Architects to design a new section of campus that met two key objectives: reflect the college's interdisciplinary teaching philosophy and its commitment to environmental advocacy.

Schopf completed the assignment in such a way that Seminar II fits seamlessly into its surrounding environment, a key tenant of her sustainable design philosophy. The five-building Seminar II complex was named one of the Top Ten green projects of 2005 by the American Institute of Architects in recognition of Schopf's integrated design and inventive use of environmentally friendly materials, including concrete. Seminar II also achieved the LEED certification level conferred by the U.S. Green Building Council – LEED-NC, v2--Level: Gold, the highest level achieved at the time by a building on a college or university in the State of Washington. By taking advantage of concrete's sustainable attributes, Schopf created an attractive complex at the center of campus that required few additional materials for finishing. Other benefits include the limited maintenance Seminar II will require throughout its lifecycle, as well the project's thermal performance, which allows the College to regulate temperature without having to install cooling systems in over 80% of the building.



### **Reduced Finishes**

"Indoor air quality drove many of the building materials decisions at Seminar II," Schopf explains. Concrete allowed Schopf's design team to meet the needs of individuals sensitive to finishes such as carpeting, paint and adhesives. The team leveraged architectural concrete for walls and flooring to eliminate the VOC's and other pollutants common when using other materials. The ability to leave surfaces exposed also limited the amount of resources necessary to create the building, strengthening its connection to the conservationist philosophy of the institution. Schopf also leveraged post tensioned structural slabs for the finished ceilings, eliminating the need for beams in the structure and minimizing the overall height of the building. "We wanted to peel back and expose the surfaces of the building with architectural concrete and build with a sense of permanence" she said.

## **Durability**

This sense of permanence is evidenced not only in the appearance of the buildings, but in the performance of the Seminar II complex over time. Unlike other building materials, concrete will not rust or rot, and consequently, will require fewer additional materials during Seminar II's lifecycle. Limited reliance on other materials for maintenance helps reduce the overall footprint that the complex will have on the environment and on finite natural resources.

## **Efficiency**

Another key objective of Seminar II was to create a super-efficient structure that would need less energy to operate. As a result of clever planning, the building's concrete envelope and thermal mass, The Evergreen State College only has to occasionally cool mechanically the large lecture and meeting rooms – accounting for less than 20% of the building's total area.

Typical concrete construction has the highest thermal mass or ability to store heat depending on its density of any traditional building system, therefore, structures built with concrete experience limited temperature fluctuations resulting in reduced energy consumption, cost savings, and limited environmental impact. Due to the thermal mass of concrete, Seminar II will be able to maintain comfortable temperatures throughout the summer months without mechanical cooling.

## **Green Roof**

The solutions for sustainable development are not limited just to the structure of Seminar II. The innovative "green roof" systems that sit atop each of the five buildings were also made possible by the use of concrete. To build a green roof, a layer of engineered soil is installed over a roof, and drought tolerant vegetation is planted for an attractive, environmentally-sound roof. Green roofs reduce stormwater runoff and provide additional insulation. Often the biggest challenge in installing a green roof is supporting the additional weight that soil and vegetation add to the building's structure. However, with a concrete structural system, Seminar II was able to support the added weight without a problem. "Because Seminar II has a concrete structural system, we didn't have to upgrade the structure to add a green roof," says Schopf.

Schopf's design demonstrates her commitments to maintaining the integrity of building's natural surroundings and to giving back to the environment. "My goal is to make a connection to the greater physical context of a project. Seminar II draws out the lush landscape of The Evergreen State College and connects its users to it." By choosing concrete, Anne Schopf of Mahlum Architects was able to achieve superior energy performance and durability at Seminar II with a minimal impact on the environment. The positive impact of this complex will continue to grow throughout its lifecycle, as Seminar II saves The Evergreen State College on utilization and maintenance costs.

## **Project Team:**

Design Team:	Anne Schopf, Mark Cork, Benjamin Doty, Brent Compton, Tricia Reisenauer, David Mount, Erol Taner, Susan Fore, Masako Flood
Owner:	The Evergreen State College
General Contractor:	DPR, Inc.

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