BEST PRACTICES 2005

UC Davis Veterinary Medicine Instructional Facility

To regain full accreditation of its renowned academic programs, the School of Veterinary Medicine undertook major reconstruction and modernization of its facilities. The project team successfully used an integrated design process to construct a climatically responsive and energy-efficient building.

Award Category

Best Overall Sustainable Design

Green Features

Mixed-mode cooling strategy

Indirect evaporative cooling

Displacement ventilation

Low VOC-emitting materials for high indoor air quality

30% reduction in water consumption

75% of construction waste recycled

Energy Savings

34% greater energy efficiency than Title 24 standards

$21,000 annually

Size

55,390 ft²

Cost

$25.1 million

Additional Awards

Expected to achieve LEED-NC Silver

Completion Date

Scheduled for completion June 2006

UC Davis' School of Veterinary Medicine is recognized worldwide as a premier institution for veterinary medicine education. Despite its reputation, UC Davis failed to receive full accreditation by the American Veterinary Medical Association (AVMA) in 1998. While passing assessment of finances, curriculum, and faculty, the school did not meet requirements for providing adequate facilities for teaching, research and clinical care. The AVMA cited overcrowded classrooms and aging, outdated facilities as grounds for denying full accreditation, asserting that it inhibited the school from meeting current standards in education.

View of the Veterinary Medicine Building. Image: SRG Partnership.

This loss of accreditation seriously threatened the program's reputation. In addition, the school was unable to participate in rankings by the US News and World Report, which only assesses schools with full accreditation. The Report had previously ranked UC Davis the number one veterinary medicine institution in the country. Despite its renowned academic programs, the school's exclusion from such rankings could influence potential student applicants, as well as prospective faculty.

Major improvements to the school's facilities had to occur for the school to regain full accreditation. UC Davis developed a $354-million long-range facilities plan containing provisions for constructing five new buildings. These structures would replace the aging, temporary buildings that were being used for everything from administration to research.

In a study funded by the Association of Higher Education Facilities Officers, 26.1% of prospective college students report rejecting an institution because an important facility was inadequate.

The School of Veterinary Medicine chose the Veterinary Medicine Instructional Facility building to be the heart of the newly modernized school. Upon completion in June 2006, the building will include multi-use classrooms, auditoriums, teaching labs, an alumni center, eating area, student lounge, and administrative offices. It will serve as the central common area for veterinary students and faculty, unifying the spatially divided school in the Health Sciences District.

The building is additionally significant because it is the first at UC Davis to undergo LEED® certification for environmentally responsible design. The project is expected to achieve a LEED-NC (new construction) Silver rating.

Low-energy design strategies are a significant component of the project's commitment to sustainability. Modeling performed by EnergyPro 3.1 simulation software predicts energy consumption at 34% less than mandated by Title 24 conservation standards.

The design team used daylight to reduce electricity consumption and enhance visual comfort. Physical models of the building were tested using the Better Bricks Lighting Lab in Portland, Oregon. The final design employs orientation, exterior shading devices, interior light shelves and an articulated ceiling that

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Team

Architect:
SRG Partnership

Mechanical/ Electrical Engineer: ARUP

Landscape: Walker Macy

Contractor: Harbison-Mahoney-Higgins Builders

Lighting Designer: Benya

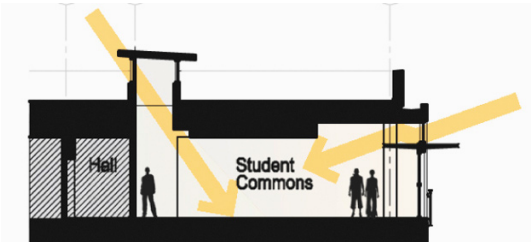
Audio/Visual: Spectrum

More Information

www.news.ucdavis.edu/search/news_detail.lasso?id=7305

www.avma.org/education/

distributes light uniformly to optimize daylighting. A centralized lighting control system uses daylight sensors and dimming to prevent excessive illumination and save energy. The building's lighting load calculates to .99 W/ft^2.



Section showing daylighting strategy. Image: SRG Partnership.

Natural ventilation cools the building's lobby and common spaces for the majority of the year. Sensors measure outdoor ambient temperature and humidity, and open louvers to allow for natural ventilation. Louvers are placed at low-level intake and high-level exhaust to create convection and circulate air through the space. Conditioned air is supplied by two variable air volume (VAV), built-up systems equipped with energy- saving variable frequency drives on the supply fans.

A night flush strategy takes advantage of the thermal properties of building mass to moderate indoor air temperatures. Heat absorbed by the building mass during the day is released by circulating lower temperature night air through the structure. The heat is exhausted from the building, and the mass is pre-cooled to absorb heat again the next day.

An indirect evaporative cooling system provides cool air to the interior spaces. In this system, water is washed across rapidly moving air to cool it via evaporation. Evaporative cooling units are positioned on mechanical units to lower the load on the campus' chilled water system. This cooling equipment uses no ozone-depleting refrigerants and less energy than a conventional air conditioning system.

Supplying air into spaces that require cooling, like large auditoriums, is accomplished by energy-efficient displacement ventilation. The system introduces low-velocity supply air at the occupied zone, displacing warmer room air which is exhausted at the ceiling. Supply air is cooled to 65°F, which produces more hours in the economizer mode. Displacement ventilation provides better indoor air quality than conventional overhead systems, since contaminants are carried upward and expelled with the warm air.

Creating a high quality indoor environment that promotes the health and well-being of building occupants was a primary concern of the design team. The interior quality of the building is enhanced by replacing conventional adhesives, sealants, and paints with low VOC-emitting alternatives. These products are made

Computer rendering of the new School of Veterinary Medicine. Image: SRG Partnership.

with fewer toxic ingredients, and emit significantly fewer pollutants with detrimental health effects. Operable windows that allow light and air to enter the building further contribute to occupant comfort by providing occupants with control of the environment.

After over six years of limited accreditation, the School of Veterinary Medicine regained full accreditation in March 2005 due to its impressive facility upgrades and new construction projects. The Veterinary Medicine Instructional Facility is scheduled for occupancy in September 2006.

Best Practices is written and produced by the Green Building Research Center, at the University of California, Berkeley.

The Best Practices Competition showcases successful projects on UC and CSU campuses to assist campuses in achieving energy efficiency and sustainability goals. Funding for *Best Practices* is provided by the UC/CSU/IOU Energy Efficiency Partnership.