Sustainable design is an integral part of Humboldt State’s commitment to providing a healthful workplace for building occupants while minimizing the campus’s environmental footprint. In this spirit, the new Behavioral and Social Sciences building will have a significantly smaller environmental impact than a traditional building. The facility is designed to work with natural site conditions to produce extensive water, energy and monetary savings.

Humboldt State produced a high-performance building without exceeding the project budget by using a design-build process. In design-build, a single contract with the building owner is created for both architectural/engineering design services and construction services. This arrangement creates a single, clear point of responsibility for quality, cost, and schedule adherence.

Humboldt State project managers describe design-build as the secret to the integrated sustainable design achievements of the Behavioral and Social Sciences building.

The university used $30.2 million in funding from California Proposition 47 to design the building to a LEED for New Construction Gold rating. The LEED system was created by the U.S. Green Building Council to standardize green building and recognize environmental excellence. The building will be the first in the 23-campus CSU system to receive this honor.

The design team began the project with a site analysis to determine how the building could take advantage of known micro-climatic factors. Collecting data for solar geometry, wind direction, and wind frequency enabled planners to design a facility that effectively utilizes daylighting and passive cooling strategies. This emphasis on the site framed the building’s ecological context as a primary consideration in the design process.

The Behavioral and Social Sciences building is positioned on a north-south axis to optimize the amount of daylight entering the interior. Properly designed natural lighting is preferred by building occupants and reduces electricity consumption by lessening the need for electric illumination.

A natural ventilation system cools the building without conventional chiller-based air conditioning. The team focused on building orientation and shape to take advantage of local winds. Three ventilation stacks move cool air through the building using the stack effect, a process that relies on the temperature difference between indoor and outdoor air to ventilate the building without energy inputs.

Modeling performed by TAS v.1.8.5 simulation software by Environmental Design Solutions Ltd. predict energy consumption at 30 percent less than mandated by California’s Title 24 energy standards.

The building takes advantage of Northern California’s rainy climate to generate water for onsite reuse. A stormwater recovery system...
composed of two 20,000-gallon tanks collects rainwater for use in toilets and urinals. Based on the square footage of the building, average precipitation figures, and average restroom use information, planners estimate that the system generates enough water to supply the building’s restrooms for four months each year.

Exterior site planners used the regional vegetation profile as a guide for sustainable landscaping. Native flora are well adapted to local conditions and have evolved characteristics that give them a higher resistance to disease and insects than non-native plants. These traits translate to tangible environmental benefits, since significantly less water and fewer pesticides are necessary to maintain the site over the lifetime of the building.

The landscaping also promotes a consciousness of the site’s cultural and environmental heritage by linking the building grounds to the new CSU Native American Center located within. The Center will display artifacts from local Native American tribes to raise further awareness of the site’s extensive history.

Using a design-build process ensured that the project team retained a high degree of control over the selection and implementation of sustainable materials. Fifty percent of the wood used in the project is certified by the Forest Stewardship Council (FSC), including Douglas Fir panels and linear wood strip ceiling and wall panels. FSC certification ensures that products come from forests managed in accordance with standards promoting environmental and social responsibility.

Materials that contain recycled content are used throughout the Behavioral and Social Sciences building to further soften its environmental impact. Twenty-five percent of the facility is comprised of products with recycled content, including steel, rough carpentry, end-grain wood flooring, and gypsum board.

When completed in 2007, the Behavioral and Social Sciences building will house ten academic departments, provide needed instructional space for labs and classrooms, and house a Native American Gallery in the ground-floor lobby. The project is currently registered with the U.S. Green Building Research Council, and documentation for submittal to the LEED program is underway.

Diagram of the natural ventilation strategy and use of the stack effect. Image: Yost Grube Hall Architecture.