



SPSCC – Science Building

LEED Gold



Project Specifics

Gross square footage:	52,000 sf
Construction cost:	\$21,901,560
Project occupied:	01/2009
Energy savings:	\$ 50,899 and 11 MBtus per year
Water savings:	45,721 gallons/yr
Waste recycled:	418.3Tons / 96.2%

Design and Construction Team

Owner's representative:	Ed Roque, Dean of Capital Facilities
Project manager:	Penny Koal, DES
Architect:	The Miller Hull Partnership
Lab Planning:	Research Facilities Design
Structural engineer:	AHBL
Civil engineer:	AHBL
Mechanical engineer:	PAE Consulting Engineers
Electrical engineer:	Sparling
Landscape architect:	Murase Associates, Inc.
LEED consultant:	O'Brien & Company, Inc.
General Contractor:	M. A. Mortenson Company

This complex provides specialized instruction for Geology, Physics, Anatomy, Chemistry and Microbiology.

The new three story Natural Sciences Building forms the western edge of the campus and compliments an existing science building to create a Natural Sciences Complex. The building provides specialized instruction for geology, botany, physics, anatomy, chemistry, and biology. An programming goal identified early in the design process centered on how to combine laboratory program elements requiring controlled mechanical ventilation with offices and classroom spaces that were to be naturally ventilated and passively cooled. This core idea significantly influenced the layout of the building and increased our goals for energy savings.

Sustainable site features extend the learning environment to the outside of the building. A central storm water infiltration pond is used for water quality testing, and native plantings within the pond and around the building are used for plant identification by the botany and biology departments.

Separating non-lab spaces in a naturally ventilated wing of the building was a fundamental strategy that led to above average energy savings. The resulting density of systems in the laboratory wing led to greater efficiency in systems piping and distribution.

A 100 person lecture hall uses motor controlled dampers and all classrooms are provided with dedicated exhaust "chimneys" to provide the primary form of ventilation.

Sustainable Sites

Land Improvement: 100 percent on-site stormwater infiltration, porous concrete, native plantings, and no irrigation

Water Efficiency

Water Efficient Fixtures: 50 percent water savings.

Site Water Use: Native plantings, including transitional native grasses to restore nutrients in the soil, allowed for no irrigation system to be installed.

Energy and Atmosphere

Natural Light: Continuous high and low ribbon windows in the laboratories provide excellent natural lighting for energy savings and improved color rendition. Refracting glass interlayer helps to bounce daylight deeper into the building.

Heating and Cooling: A variable air volume mechanical system maintains safe ventilation standards in the laboratory wing, utilizing occupancy sensors to reduce air exchanges during hours of non-use, and heat recovery in the lab exhaust system to reduce energy consumption.

Natural Ventilation: Offices and Classrooms, including a 100 seat lecture hall, utilize natural ventilation, in-slab radiant heating and thermal mass to greatly reduce energy use.

Measurement and Verification: Mechanical systems are monitored to provide opportunities for tuning and optimization of the systems over the life of the building.

Material and Resources

Construction Waste: Diverted 95 percent of construction waste material from landfill.

Recycled Materials: Recycled content exceeded 10 percent of building materials, including; CMU, steel, wood doors, gypsum products, toilet partitions, particle board, aluminum panels, rigid insulation, ceiling tiles, carpet tile, and ceramic tile.

Local Materials: Exceeded 20 percent of materials manufactured or fabricated within 500 miles of the project site.



Indoor Environmental Quality

Low-emitting Materials: Sealants and adhesives, paint, carpet, and composite wood products all meet required standards for low-emitting materials, reducing off-gassing of these finish materials.

Increase Ventilation Effectiveness: Laboratories are ventilated with 100 percent outside air. Smaller individual offices are naturally ventilated with operable windows. Larger 50 person classrooms utilize stack ventilation and operable windows to draw air through the space. A 100-seat lecture hall utilizes stack ventilation and an automatically controlled air intake damper to draw air through the space. In both classrooms, a mechanical assist system supplements the natural ventilation when necessary.

Controllability of Systems: Offices are naturally ventilated with operable windows and controllability of a solar powered exhaust fan in each office. Classrooms and laboratory ventilation is controlled by individual thermostats.

Innovation

Air Quality testing: A scale model of the proposed building was subjected to wind tunnel testing to confirm that exhaust air effluent would not conflict with air supply and natural ventilation openings in this building and adjacent buildings.

Green Housekeeping: A manual including green cleaning products and procedures was prepared and adopted by the College.

Exemplary Performance: Water savings in excess of 48 percent, and diversion of over 96 percent of construction waste from landfill qualified for exemplary performance.