Brady Memorial Laboratory 2

Yale University renovated the 2nd floor of the Brady Memorial Laboratory in alignment with the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) rating system at the Gold certification level for Commercial Interiors.

ENERGY EFFICIENCY

According to the Environmental Information Administration, buildings consume about 40% of the energy and 72% of the electricity produced in the United States. To improve efficiency, the Brady 2 renovation utilizes energy-conserving technologies that also lower the annual operating cost. Occupancy sensors in offices, equipment rooms, and lavatories provide automatic off-switching when these areas are not occupied. During unoccupied hours, temperature set points are expanded to reduce energy consumption. A heat recovery system captures energy from the main exhaust system and uses it to preheat or pre-cool the outdoor supply air seasonally. Ventilation fans have variable frequency drives that allow fan motors to reduce speed in response to reduced airflow requirements. Perimeter radiant heat panels increase energy performance and occupant comfort.

INDOOR ENVIRONMENTAL QUALITY

On average, Americans spend 90% of their time indoors, and it is estimated that indoor pollutant levels can exceed outdoor levels by two to five times. In the Brady 2 renovation, ventilation rates, temperature and lighting control, and ample views to the outdoors were carefully designed to promote occupant well-being. Carbon dioxide sensors ensure that fresh air is supplied when CO_2 concentration levels are high. Finishes, such as interior

86.2% of the wood used in the project was certified by the Forest Stewardship Council

97.1% of construction debris was diverted from landfills

20.4% of materials installed in this renovation were manufactured from recycled materials

61.9% of construction materials were manufactured within 500 miles of the project site, reducing pollution from delivery fuel and lowering overall transportation costs

54.1% reduction in annual potable water use is anticipated with the water-saving measures provided

paints, sealants, and adhesives, as well as the office system furniture, have low volatile organic compound (VOC) content to reduce toxicity and noxious odors. No urea-formaldehyde resins or binders were used in the fabrication of laboratory casework or other composite wood products. Post-construction, new air filters were installed to ensure a dust-free environment during occupancy. In addition, the renovated floor was air-tested to ensure that VOC, particulate, and carbon monoxide levels were well below acceptable thresholds.

MATERIALS

This project diverted the majority of its construction waste from the landfill through a rigorous recycling program. To reduce the environmental impact created from the processing and distribution of virgin materials, care was taken to specify locally manufactured materials with a high recycled content. Such materials include steel, concrete, and FSC-certified wood used for the laboratory casework. In addition, the furniture in the offices is GREENGUARD-certified and has met the low-emitting products test requirements. A built-in recycling center encourages recycling of daily waste materials such as plastics, metal, office paper, equipment, and corrugated cardboard.

WATER EFFICIENCY

In the United States, more than 340 billion gallons of fresh water are withdrawn daily from rivers, reservoirs, and streams to support industrial, commercial, residential, and agricultural needs. After use, this water is discharged back into these water bodies. In an effort to conserve water, ultra-low-flow lavatories and urinals and dual-flush toilets were used in this renovation.

TRANSPORTATION

Yale University strives to reduce automobile use by providing alternative solutions such as easy access to public transportation and car/van-pooling throughout the campus. The Brady Memorial Laboratory is regularly serviced by both the Yale Shuttle and CT Transit bus lines, which also connect the facility to New Haven's Union Station for those who commute by train. In addition, its central location is within walking distance of many local amenities. Yale's parking policy incentivizes carpooling, with discounted rates for two-person carpools and free parking for carpools of more than three persons. To further discourage individual automobile use, no new parking spaces were added for this project.

INNOVATION IN DESIGN

Design innovations in the Brady 2 renovation include the use of low-flow laboratory sink faucets and the installation of an educational display showcasing the project's sustainable features. In addition, the project achieved innovative levels of construction waste reuse and recycling, with more than 97% of construction waste diverted from the landfill.

Architect
Tate + Burns

Total floor area
12,500 sq ft

Opening date
December 2008

Yale