

Brady Memorial Laboratory 3



Yale University renovated the 3rd 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 Platinum certification level for Commercial Interiors.

ENERGY EFFICIENCY

High-performance building envelope upgrades in Brady 3 include new energy-efficient windows and improvements to existing masonry walls to reduce heating loads through infiltration. Spectrally selective window glazing minimizes unwanted solar gain and glare from east and west exposures while maximizing visible daylight in order to reduce demand for artificial lighting. Innovative and efficient lighting fixtures and layout provide the required levels of illumination but reduce energy loads by 25% compared to building code compliant standards. Automatic daylighting and occupancy controls further reduce energy costs. New technologies such as active chilled beams provide low air volume radiant heating and cooling and effective fresh air ventilation. The laboratory spaces meet their significant ventilation requirements—nine changes per hour of outside air—with a high-efficiency air handling unit. Ventilation strategies include demand control and variable frequency to modulate delivery rates based on need. Energy-recovery systems recirculate discharge energy by using exhaust air to indirectly preheat or precool incoming fresh air.

INDOOR ENVIRONMENTAL QUALITY

In the Brady 3 renovation, ventilation strategies such as CO₂ and intake monitoring and measurement ensure a generous supply of fresh air.

100% of the wood used for doors, millwork, and laboratory casework was certified by the Forest Stewardship Council

98% of construction debris was recycled, diverting reusable materials from incinerators and landfills

30% reduction in annual potable water use is anticipated

100% of new eligible equipment and appliances are Energy Star-rated by the EPA for lower electrical power requirements

95% minimum efficiency rating for the air filtration systems

Filtration systems have a minimum efficiency rating of 95% to virtually eliminate airborne particulates, and ventilation systems are pressurized against laboratory spaces to prevent contamination by airborne chemicals. Interior finishes such as paints and adhesives meet the strictest U.S. standards for VOC (volatile organic compound) emissions. Flooring products such as resilient tile and carpet meet strict emissions standards from FloorScore® and Green Label Plus; and no urea-formaldehyde resins or binders were used in the fabrication of engineered wood products such as doors, particle board, and casework assemblies. A comprehensive program for commissioning ensures that heating, cooling, ventilation, and lighting systems run as intended, and Brady 3 spaces passed post-construction EPA standardized indoor air quality tests. All spaces are designed to current thermal comfort standards for heating and cooling, and mechanical and lighting systems allow occupants to control thermal and visual settings. Hallway and door glazing helps interior spaces feel open and provides most workstations with access to outdoor views.

MATERIALS

This project recycled more than 98% of its demolition and construction waste. Materials with high recycled content were chosen for metals, engineered wood, insulation, gypsum board, and finish products such as flooring, ceiling tiles, and countertops. And construction materials such as brick, steel, wood, gypsum board, and furniture were selected from regional sources of extraction and manufacture. Such practices reduce the negative environmental impact of discarding waste and harvesting virgin materials, lower energy costs related to transportation, and strengthen local economies. Wood doors, millwork, and laboratory casework are certified as sustainably harvested by the Forest Stewardship Council (FSC), whose certification requires measures to improve forest and ecosystem health and limits harmful forestry practices.

WATER EFFICIENCY

Sustainable design goals included limiting the negative environmental effects of delivering and treating potable water. Laboratory faucets specified at 1.4 gallons per minute, high-efficiency toilets, sensed and timed lavatory faucet controls, and retrofitted showerheads were used in this renovation, reducing potable water use by 30% over EPA standards.

TRANSPORTATION

The Brady Memorial Laboratory site has always been easily accessible by public and campus transit options, including the CT Transit bus lines and the Yale Shuttle, which also connect the facility to New Haven's Union Station for those who commute by train. Yale further supports alternative transportation options through the addition of bicycle racks and changing/shower facilities as well as a Zipcar share program. No new parking spaces were created for this project.



Architect

Tate + Burns Architects LLC

Total floor area

9,577 GSF

Opening date

July 10, 2012

Yale