Class of 1954 Chemistry Research Building





Yale University designed and built the Class of 1954 Chemistry Research Building in alignment with the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) rating system at the Silver certification level.

INNOVATION IN DESIGN

The Class of 1954 Chemistry Research Building was Yale's pilot LEED project, and it served as a proving ground for many energy, water, and resource efficiency strategies that have since been incorporated into designs for other Yale buildings.

ENERGY EFFICIENCY

Thanks to several energy-saving innovations, the Class of 1954 Chemistry Research Building consumes 25% less energy than a standard high-intensity laboratory building of its size. The building's energy-efficient lighting system is supplemented by windows designed to provide ample natural light. The ventilation system draws fresh air into offices, transfers it to the labs, and then exhausts it through high-efficiency, dual-sash fume hoods with heat exchangers to make use of otherwise wasted energy. Occupancy sensors turn off lights and minimize air flow when spaces are unoccupied. Using computer energy modeling and full-system commissioning, Yale has ensured that this building will operate properly to provide substantial savings in annual energy use and cost. **25% less energy** is consumed than in a standard high-intensity laboratory building

75% of the wood used in the project was certified by the Forest Stewardship Council

72% of construction debris was diverted from landfills

33% reduction in the use of process water was achieved by means of a closed-loop chilled water system for cooling equipment in chemistry labs in lieu of commonly used once-through system

INDOOR ENVIRONMENTAL QUALITY

Indoor environmental quality was a high priority for this chemistry research facility. Excellent air quality is ensured by circulating ample fresh air at carefully calculated velocities through the entire building. Chemicals are kept in specially secured and ventilated enclosures. Interior paints, sealants, and other finishes were specified for low volatile organic compound (VOC) content to reduce material toxicity and the potential for noxious odors. The visual environment is enhanced by ample windows for south-facing offices and north-facing labs, providing natural light as well as views to the outdoors for all occupants.

MATERIALS

Environmentally preferable materials were carefully selected during the construction process. These include recycled steel, masonry, wallboard, flooring, and ceiling tiles, as well as laboratory cabinetry made from sustainably harvested wood. Seventy-two percent of construction and demolition waste was recycled, including all of the excavated rock.

WATER EFFICIENCY

Stormwater is filtered on site, ensuring that runoff from the building does not add water to the municipal stormwater system. To conserve potable water, the condensate from the air conditioning system is stored and used to irrigate the landscape. The by-product of a reverse osmosis/deionized water system needed for research processes is used for toilet flush water. Efficient water fixtures also lower the building's water use: bathrooms are outfitted with ultra-low-flow faucets and toilets. As a result, the building uses 40% less water than allowed by code.

SITE AND LANDSCAPE

Located on the site of a former asphalt parking lot and the foundation of a two-story house that was moved to Edwards Street, the Class of 1954 Chemistry Research Building was landscaped with water-efficient plantings and drainage to minimize stormwater runoff. The building also uses reflective roofing materials to reduce the urban heat island effect.



Architect Bohlin Cywinski Jackson

Total floor area 117,985 sq ft

Opening date October 2005

Yale