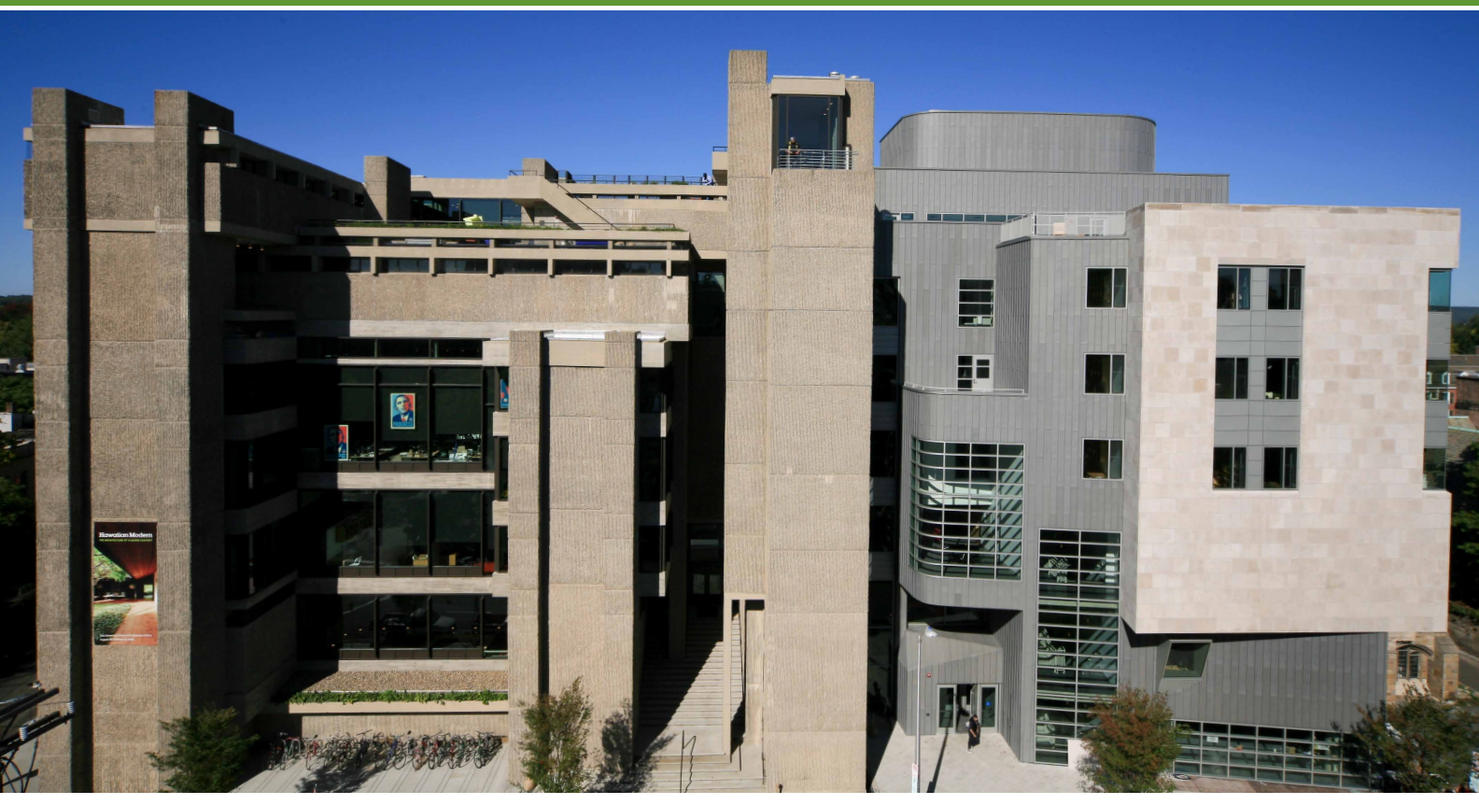
Rudolph Hall and Loria Center



Yale University renovated Rudolph Hall and designed and built the adjoining Loria Center in alignment with the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) rating system at the Gold certification level.

ENERGY EFFICIENCY

In an effort to achieve Yale's greenhouse gas reduction goal, energy conservation is a fundamental focus of the buildings' operations. Large windows and skylights provide natural light, reducing the need for light from artificial sources, and a combination of natural ventilation and insulation makes heating and cooling more efficient. The replacement double-glazed facade of Rudolph Hall provides daylight with solar control through spectrally selective low-e coating. The Loria Center's operable windows have interlocks that are tied to the mechanical ventilation and cooling/heating system, reducing energy use. Enthalpy heat exchangers in all lecture hall and classroom air handling units salvage useful energy and transfer it to incoming fresh air, reducing the overall need for cooling in summer and heating in winter. A high-tech monitoring system ensures all systems operate at peak efficiency. These sustainable design elements have reduced energy use by 14%.

INDOOR ENVIRONMENTAL QUALITY

To maintain indoor air quality, building and finishing materials—including paints, adhesives, carpets, and composite woods—were selected for low emission of contaminants such as volatile organic compounds (VOCs), and measures were taken to prevent mold and mildew growth within the buildings. More than 60% of occupied areas have access to natural light;

93% of the original building structure was retained in the renovation of Rudolph Hall

92% of construction debris was recycled, diverting it from landfills

67% of the wood used in the project was certified by the Forest Stewardship Council

30% of materials came from within 500 miles of the project site, reducing pollution from delivery fuel and lowering overall transportation costs

55% reduction in annual potable water use is anticipated with the water-saving measures provided

operable windows in the Loria Center's offices allow natural ventilation; and direct air monitors ensure that the ventilation system provides sufficient air throughout the buildings.

MATERIALS

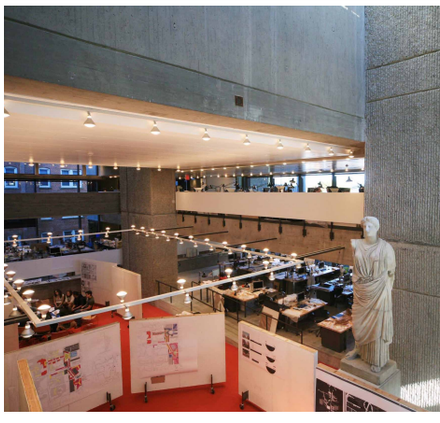
Materials used in construction were selected for their high recycled content and, whenever possible, were locally extracted and manufactured. More than 30% of materials came from within 500 miles of the project site, and 67% of the wood used came from sustainably managed forests. These efforts, in addition to vigilant recycling, diverted 92% of construction debris from landfills.

WATER EFFICIENCY

Low-flow bathroom and kitchen fixtures, including dual-flush toilets and waterless urinals, significantly reduce the amount of potable water used on a daily basis. In addition, stormwater is collected and reused in a gray-water system to further reduce the potable water demand. Overall, water-conserving fixtures and the stormwater system reduce water use by 55% in comparison to an average academic building of comparable size.

SITE AND TRANSPORTATION

The pavers and roof of the buildings are made of highly reflective materials, reducing trapped heat. Trees planted around the buildings further mitigate the urban heat island effect. On-site stormwater retention and storage prevents the municipal stormwater system from overflowing. The buildings occupy a central spot in Yale's downtown New Haven campus, close to shopping, dining, Yale Shuttle stops, and CT Transit bus stops. Secured bicycle storage and showers are provided for commuters.



Architect
Gwathmey Siegel & Associates Architects

Total floor area
110,307 sq ft (Rudolph Hall)
82,353 sq ft (Loria Center)

Opening date
September 2008

Yale

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