

Duke Sustainability

Trent Semans Center for Health Education

Building Information

Tenant: Duke University School of Medicine

Architect: S/L/A/M Collaborative, Duda Paine

Construction: Stewart

Purpose: Teaching Facilities

Footprint: 104,000 sq ft

Centrally located amongst the Medical Pavilion, Cancer Center and research facilities in Duke's Medical Campus, the Mary Duke Biddle Trent Semans Center for Health Education is the first new site for medical student education since 1930. The Center opened in February of 2013 and is the first building on the Medical Campus to earn LEED™ Gold Certification.

Sustainable Site Features

The Trent Semans Center for Health Education is located on a previously developed infill site at the heart of Duke's Medical Campus, a selection that not only serves to conserve neighboring open space but also to minimize urban sprawl.

Medical students and faculty occupying the building are allowed ready access to eight Duke Transit or public bus stops within a quarter mile walking distance as well as basic services and high density residential areas within a half mile. In this way, staff and students are able to minimize use of personal automobiles. Planners further promoted the use of alternative transportation by offering onsite bicycle racks and choosing to not provide additional parking facilities.

Complementing the accessibility of offsite amenities, the Trent Semans' landscape features pedestrian-oriented planning by committing 85 percent of the site area to major pedestrian areas and native/adapted/drought tolerant planting areas, which are used to protect or restore 58 percent of the site.

The building's contribution to the heat island effect is limited by using light roofing materials with a high Solar Reflective Index in combination with an accessible green roof on the fourth floor.

Water Efficiency

In addition to having a large percentage of drought tolerant plants, the Trent Semans Center for Health Education uses a highly efficient irrigation system that reduces outdoor water use by 50 percent. A 100,000-gallon rainwater catchment cistern at the Duke Medical Pavilion and Cancer Center supplies the entirety of this water used for irrigation, and in doing so, conserves high quality potable water.

The Center deals responsibly with stormwater runoff by capturing and cleaning 40 percent of the runoff with bio-retention rain gardens and recirculating an additional 15 percent using a stormwater fountain and runnel network.

Energy Efficiency

The building envelope and HVAC design of the Trent Semans Center for Health Education is 17 percent more energy efficient than traditional standards, translating to a greenhouse gas emission reduction of 96 tons of carbon dioxide per year. These results are achieved primarily through occupancy sensors, and continuous monitoring by the Building Management Control Systems and Variable Flow systems, all of which minimize extraneous energy use.

Electricity consumption from lighting is reduced through the use of LED lighting and daylight dimming as well as an east-west building orientation that maximizes opportunities for natural light.

Independent commissioning is performed regularly on building systems and equipment in order to ensure that all aspects are operating as designed and at optimal levels.

Indoor Air Quality

A healthy indoor environment is maintained through low emission carpet, paint, sealants and adhesives, and composite wood products that are free of added urea formaldehyde resins.

Occupancy sensors throughout the building communicate with the mechanical systems to maintain a comfortable indoor temperature and regulate carbon dioxide levels.

Resource Management

The use of renewable building materials (e.g. cork and bamboo products) and materials with recycled content were prioritized throughout the building process. Materials with a high percentage of recycled content that were utilized include aluminum window frames (50 percent), insulated glass (25 percent), and steel (65 percent).

In addition to having a large recycled content, 20 percent of the materials were targeted to be manufactured within 500 miles of campus, and over 50 percent of the wood based materials were certified in accordance with the Forest Stewardship Council.

In accordance with Duke's goal to support the local economy, over 50 percent of construction waste was diverted to a local building recycling company for salvage or reuse.

Integration of Sustainability in Design & Construction Process

The Trent Semans Center was granted 98 percent of the total attempted points for LEED™ Gold certification, an accomplishment that was achieved through early decision-making, and the consistent reevaluation of sustainability targets.

The LEED™ scorecard was used to identify opportunities and track progress relative to the sustainable design component of the project.