

The Williams Bookstore

Sustainability Case Study




Cambridge Seven Associates, Inc.



Designed by Cambridge Seven Associates, the new Williams College Bookstore provides a dynamic and inviting retail venue for students, faculty, residents and visitors. This three-story building, features large two-story windows, canopies, and rhythmic openings in the façade that create a dialogue between the new building and the existing street fabric while the use of local materials celebrates the vernacular expressions of Western Massachusetts and the unique character of the Berkshire Mountains. Housing trade books, textbooks, a 3rd wave coffee bar, Williams College memorabilia and swag, as well as commercial office space on the third floor, the Bookstore’s interior spaces are playful and bright, juxtaposing brick walls with light wood and fresh quartz shelving. A staircase serves as a vertical hearth, allowing guests to move freely between books and retail. The building will also serve as a community room for faculty book readings, organized book groups, and student study areas.

LEED® Facts








The Williams Bookstore
Williamstown, MA



LEED v3 for New Construction
Certification anticipated 2018

Platinum

82*

 Sustainable Sites	19/26
 Water Efficiency	6/10
 Energy & Atmosphere	31/35
 Materials & Resources	5/14
 Indoor Environmental Quality	12/15
 Innovation in Design	6/6
 Regional Priority	3/4

* Anticipated points out of a possible 110

Project Team

ARCHITECT: Cambridge Seven Associates, Inc.
Principal in Charge: Stefanie Greenfield, AIA, LEED AP
Project Architect: Jan Brenner, AIA
LEED Administrator: Douglas Flandro, LEED AP

STRUCTURAL ENGINEER: Odeh Engineers
MEP/FP ENGINEER: Rist Frost Shumway
CIVIL ENGINEER: Guntlow & Associates
LIGHTING DESIGN: Sladen Feinstein Integrated Lighting
GEOTECHNICAL: Haley & Aldrich
GENERAL CONTRACTOR: Engelberth Construction

Within 1/2 mile of 10 basic services

Highlights of the sustainable sites credits include Credit 2: Development Density and Community Connectivity. This 14,900 square-foot, college bookstore, coffee bar, and memorabilia shop anchors an important corner of Williamstown and the college campus. Choosing a site in the historic center of Williamstown reduces urban sprawl which saves resources that otherwise would be needed to build new roads and utilities. The central, connected location also encourages pedestrian and bicycle transportation, reducing dependence on petroleum-based fuels.

1	US Post Office	Post Office	7	Williams College Museum of Art	Museum
2	Clip Shop	Beauty Salon	8	Williamstown Savings Bank	Bank
3	Spice Root	Restaurant	9	Williamstown Community Pre-School	School
4	The 62' Center for Theatre and Arts	Theatre	10	Williamstown Fire Department	Fire Station
5	First Congregational Church	Place of Worship	11	Waterworks Laundry	Laundry
6	Chapin Library	Library	12	Tasha Yoga	Fitness Center

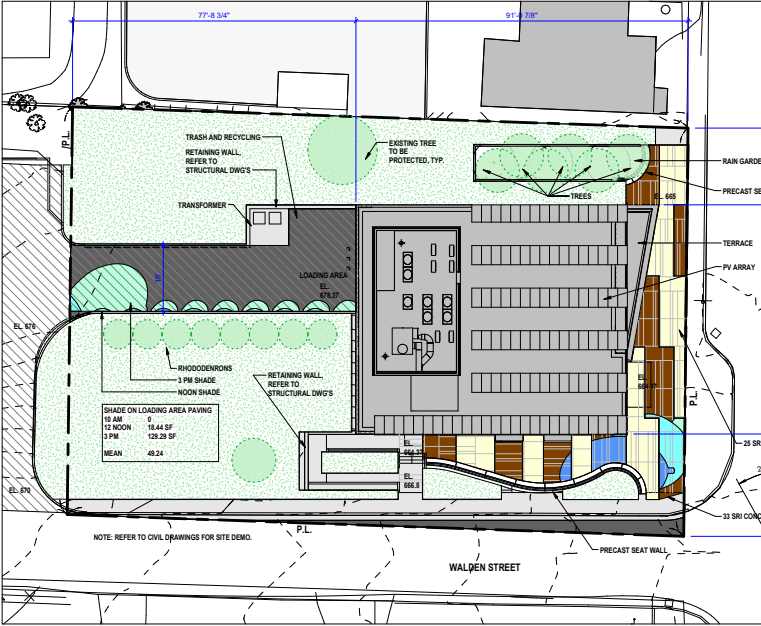
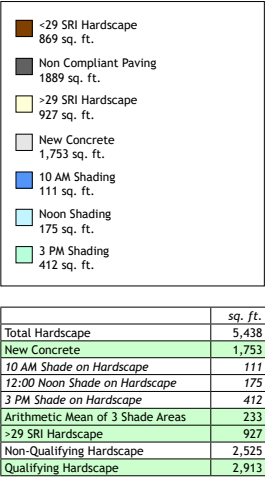


Residential Area with 10 units per Acre or more

SUSTAINABLE SITES CREDIT 2: DEVELOPMENT DENSITY AND COMMUNITY CONNECTIONS



Sustainable Sites



50% high albedo hardscape

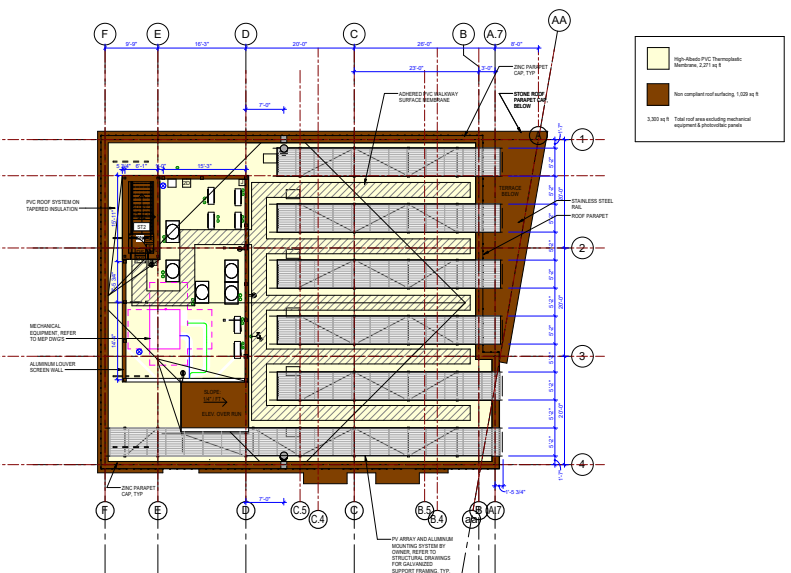
SUSTAINABLE SITES CREDIT 7.1: HEAT ISLAND EFFECT, NON-ROOF

LEED awards one point for projects that create open space that is equal to or greater than the building footprint. This open space provides space for students and the community to study and enjoy natural systems and biodiversity. Credit 5.2: Maximizing Open Space receives a regional bonus point in New England because of the importance of open space to flora and fauna of the rapidly developing region.

The Williams Bookstore combats heat island effect through the choice of light colored or “high albedo” materials for the roof and for the hardscape on the project. The project team selected light colored concrete to achieve 50% high albedo hardscape.

75% high albedo roofing

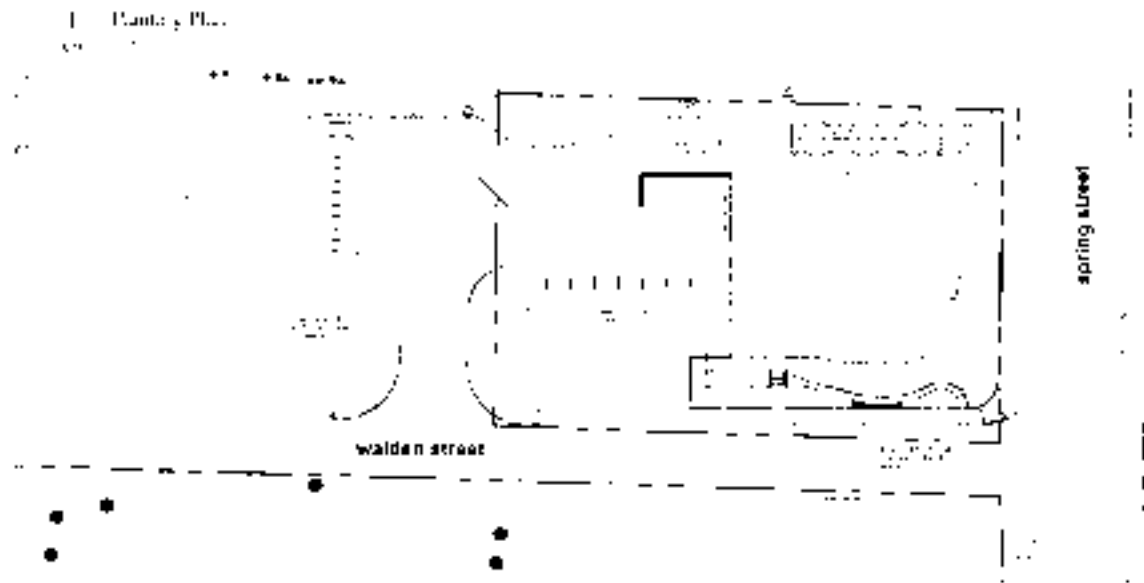
White thermoplastic membrane roof material provides high albedo material for more than 75% of the roof. This roofing material reflects the sunlight and heat avoiding the creation of heat islands in which large fluctuations of heat from day to night drive away sensitive plants and animals and drive up cooling costs.



SUSTAINABLE SITES CREDIT 7.1: HEAT ISLAND EFFECT, NON-ROOF



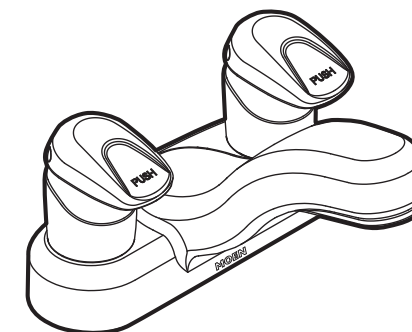
50% reduction in outdoor water use



Outdoor water usage accounts for 30% of water consumed in the United States. Reducing water used in landscaping helps to conserve local potable water resources. The Williams Bookstore's design team carefully selected the plantings used on the building site to include a diverse selection of native plants reducing water usage by 50% from a baseline design case.



30% reduction in indoor water use

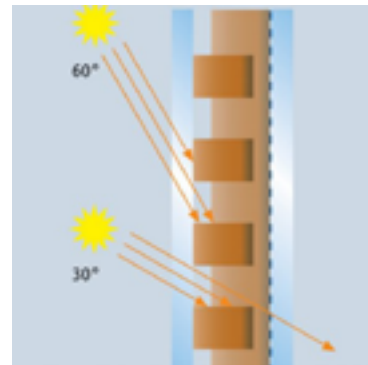


The Williams Bookstore reduces indoor potable water use by 30% from a design baseline by selecting low flow faucets, urinals and toilets that use a reduced amount of water. Reducing water demand by building users relieves pressure on the municipality to produce potable water saving energy and resources.



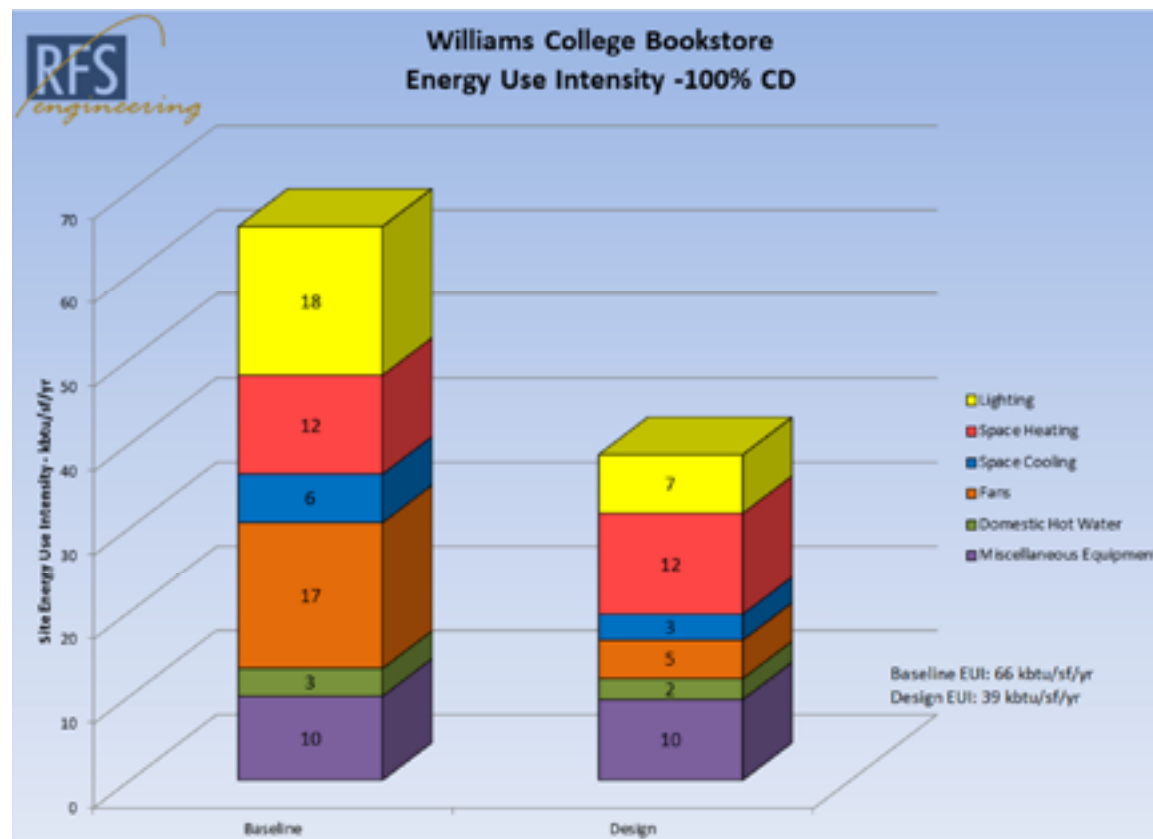
An equivalent annual energy savings of 62%

The most innovative sustainable aspect of The Williams Bookstore is the project's commitment to reduce energy usage. The building design includes a tight envelope with thicker than average walls to create an energy use intensity that is 41% better than baseline, controlled daylighting with a glazing to wall ratio of 24%, Okawood insulated glass with integral wood louvers and a U-Value of .28, and exterior brise soleil for enhanced thermal protection. The building achieves an aggressive EUI rating of 39. It has no natural gas line, reflecting the client's desire for the building to use no fossil fuels, and features a variable refrigerant flow HVAC system with three 100% dedicated outdoor air energy recovery ventilation units. Photovoltaics on the roof are used in an expressive pattern to act as a simple canopy, providing 36% of the building's annual electrical use.



ENERGY & ATMOSPHERE CREDIT 2: ON-SITE RENEWABLE ENERGY

Photovoltaic panels offset \$5,900 annually in energy costs



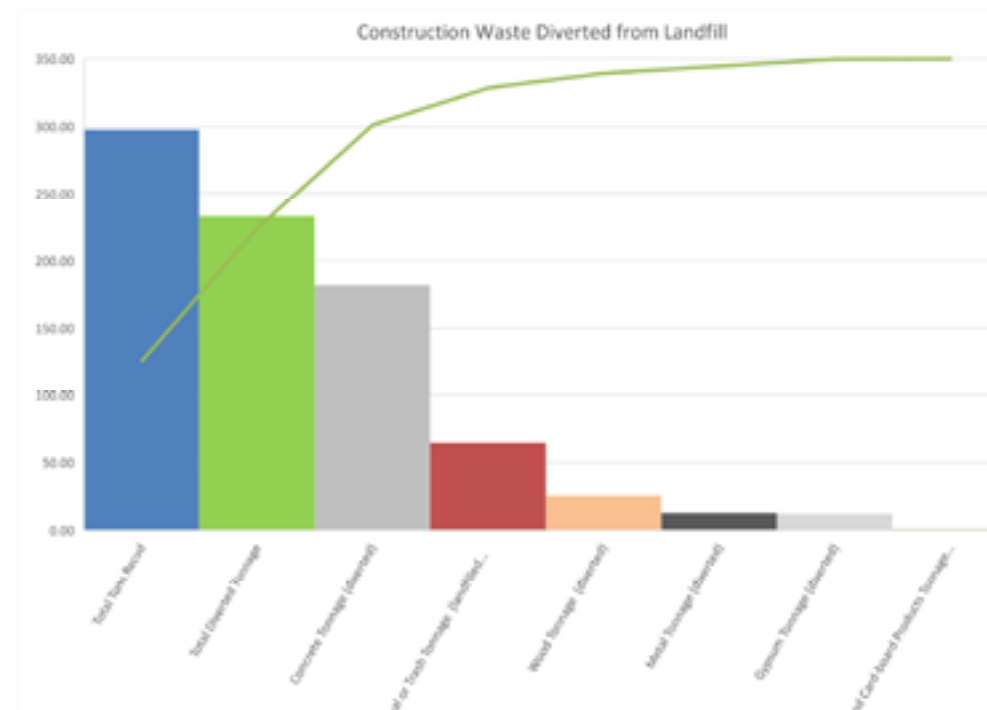
ENERGY & ATMOSPHERE CREDIT 1: OPTIMIZE ENERGY PERFORMANCE



Generating renewable energy on-site dramatically reduces the amount of energy required from the building. Lower energy usage through the production of on-site clean solar energy reduces air pollution caused by traditional fossil fuel energy production. Cleaner air has a direct impact on human health. The design of The Williams Bookstore celebrates, rather than hides the solar array on the roof. It forms a dynamic part of the building's presence on Spring Street.



Recycled 78% of Construction Waste



MATERIALS & RESOURCES CREDIT 2: CONSTRUCTION WASTE MANAGEMENT

The EPA estimates that 534 million tons of construction and demolition waste was generated in 2014. Commercial construction generates 2 to 2.5 pounds of construction waste per square foot most of which can be recycled. The Williams Bookstore construction team set ambitious goal for recycling in a Construction Waste Management Plan before construction began and achieved the goal of diverting more than 75% of the construction waste away from public landfills.

When construction waste is recycled it reduces the demand for virgin materials and extends the life of existing landfills, reducing the need to find new landfill sites.

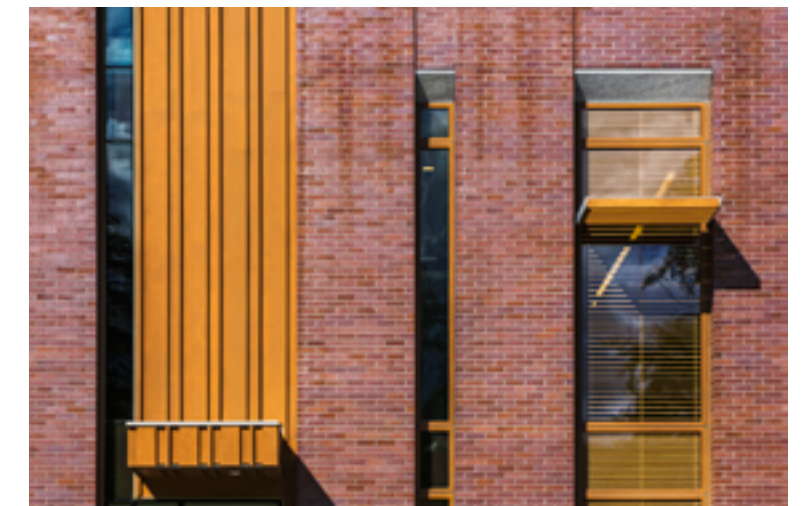


MATERIALS & RESOURCES CREDIT 4: RECYCLED CONTENT

10% of Building Products made from Recycled Content

A focus on including materials with a high percentage of recycled materials in recent versions of LEED certification has transformed the building material marketplace. Vendors are continuously seeking ways to use post and pre-consumer recycled materials in their products. The use of recycled materials reduces the demand for virgin materials and diverts waste materials from landfills. Recycled materials in The Williams Bookstore include structural steel, copper roofing, ceiling tiles, gypsum wall board, carpets, and rubber flooring.

10% of Building Products Sourced from Local Materials

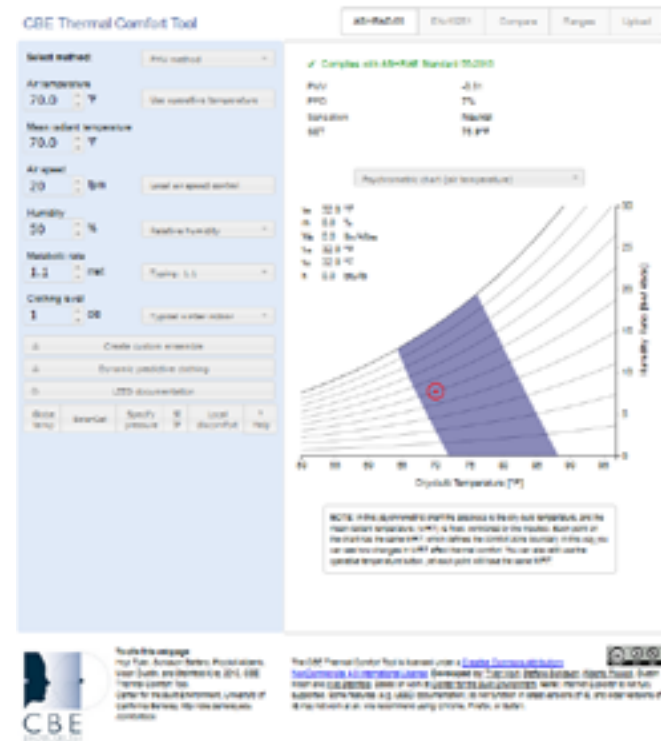


MATERIALS & RESOURCES CREDIT 5: REGIONAL MATERIALS

Using local building materials decreases the need for fossil fuels in transporting materials from long distances. This in turn reduces air and water pollution associated with transportation, especially when using fossil-based fuels. Local materials in The Williams Bookstore include the granite and bricks on the building exterior.



50% of Building Occupants have Access to Individual Thermal Comfort Controls



INDOOR ENVIRONMENTAL QUALITY CREDIT 7.1
THERMAL COMFORT, DESIGN

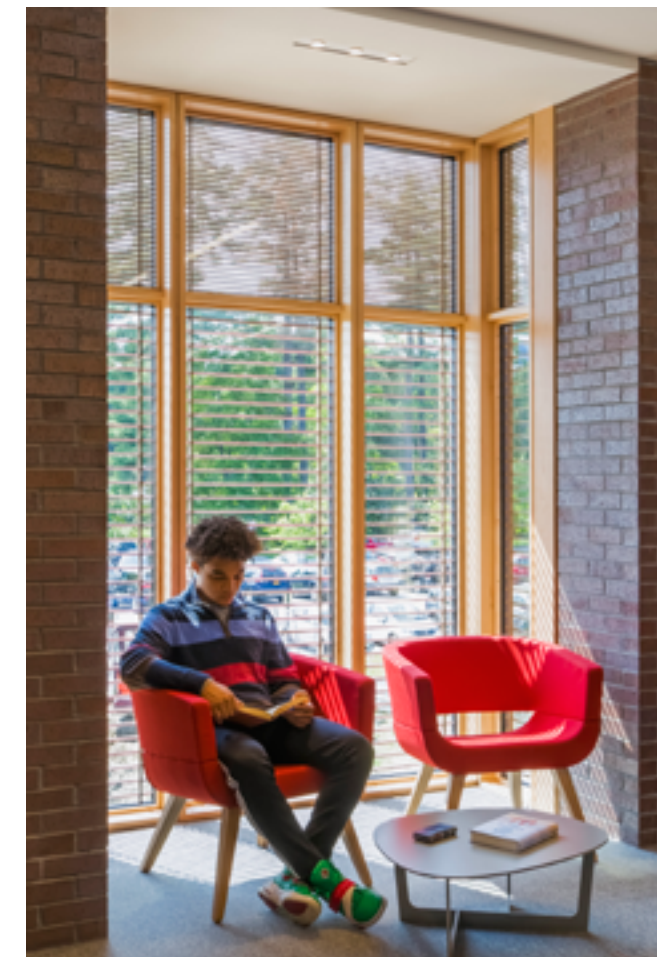
LEED Indoor Environmental Quality Credit 4 lays out challenging limits to Volatile Organic Compounds (VOCs) for adhesives and sealants, paints and coatings, and for flooring. Plywood and other composite wood products need to be made with no added urea formaldehyde. These airborne chemicals contribute to smog pollution and have negative impacts on the health of construction workers and on building occupants.

Low Emitting Materials Used Throughout the Building

A well designed building should save energy while still providing an acceptable level of thermal comfort to the building's users. The Williams Bookstore designed a heating and cooling system to comply to industry standards as listed in ASHRAE 55-2004. In addition, more than 50% of building users have the access to thermal controls and building users will participate in a thermal comfort survey to assess their thermal comfort within 6 to 18 months after the building's occupancy date. If more than 20% of the building's users are uncomfortable, corrective action will be taken to ensure thermal comfort.

95% of Occupied Spaces have a Direct View to the Exterior

Providing views to the exterior plays a roll in customer and employee satisfaction and quality of life by connecting individuals to the exterior environment. This connection to the seasonal circadian rhythms and natural flora is proven to positively influence human well-being. The Williams Bookstore design team carefully balanced the window to wall ratio to reduce the need for electric lighting while controlling solar glare and solar heat gain. Exterior shades and wooden louvers embedded into the window assembly help to create a comfortable reading environment.

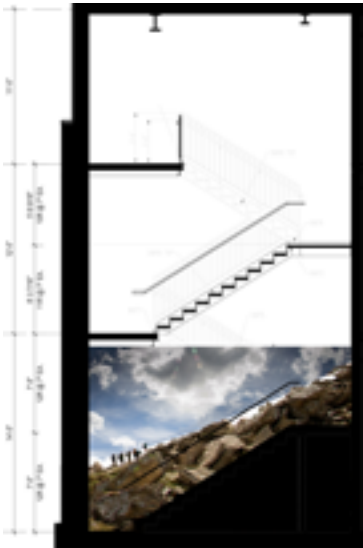


Regularly Occupied Space without Direct Line of Sight
Direct Line of Sight to Perimeter Vision Glazing with Horizontal View at 42 inches

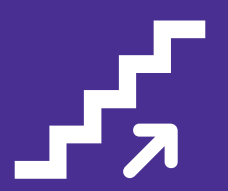
INDOOR ENVIRONMENTAL QUALITY CREDIT 8.2: VIEWS



Design Encourages Use of Stairs



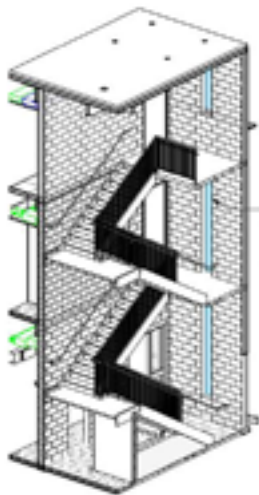
Take the Stairs



Burn Calories Not Electricity

These elevators are a major energy consumer within our building. Using the stairs will save energy. Walking up a flight of stairs will burn at least 5 calories per flight. If you add some speedier stepping, you could double your calories burned.

81 Spring Street Williams



Stair 1 Axonometric View



Stair 3 Axonometric View

CREDIT 78: DESIGN FOR ACTIVE OCCUPANTS

Encouraging the use of stairs in the building improves the occupant’s health and reduces the building’s energy use. The Williams Bookstore’s design team placed the bold stairway connecting the two floors of the retail space in the center of the room, highly visible from the entry. The stairway leading to the third floor contains a graphic mural showing Williams College students climbing a large mountain. This artwork and ample natural light draws the eye and encourages the use of stairway over the elevator. Signs near the elevator also explain the benefits of physical exercise.