



## Summary

The renovation of the 24,000 square foot Arthur and Elizabeth Schlesinger Library at the Radcliffe Institute for Advanced Study was completed in February 2005. Schlesinger is one of a group of buildings at the head of the historic Radcliffe Yard. Built in 1907, the existing masonry structure consists of four stories above grade, a basement, and a small unoccupied attic.

The building was originally home to the Radcliffe College Library. In 1967, after the Library was moved to a new building, the existing building became a research library for scholarship on the history of women in America. The building suffered from several renovations that obscured or obliterated the character of the building, and made the structure unwelcoming and difficult to navigate.

## Building Highlights

- Renovation of a 1907 building—100% of building shell and elements preserved
- Open space preserved; tree shading reduces the heat island effect
- Energy use reduced by 25% over code
- 91% of construction waste diverted from landfills
- Views outdoors for over 90% of spaces
- Green cleaning contract signed

## Summary continued:

The Schlesinger project was designed to facilitate its use by librarians and patrons while meeting the needs of a modern special collections library and restoring some of the building's character.

The renovation reclaimed some of the building's original amenity and grace through careful protection of the original pieces of the building. This included minimizing changes to the building envelope, with the only significant changes being the addition of an accessible ramp to the main entrance and addition of interior storms to the windows. The few original interior elements, including a stained glass window and marble stair, were protected and restored. One highlight was restoring part of the second floor to a double-height daylit reading space.

Many of the decisions made to protect the collections were also sustainable choices. New material selection was based on function as well as minimizing off-gassing to protect the occupants and the collection. In addition, the mechanical system was carefully designed to minimize the chance of mold growth and particulate contamination while improving energy efficiency. Commissioning was also critical throughout the design and construction process, given the complex mechanical system and requirements to maintain proper temperature and humidity throughout the building.

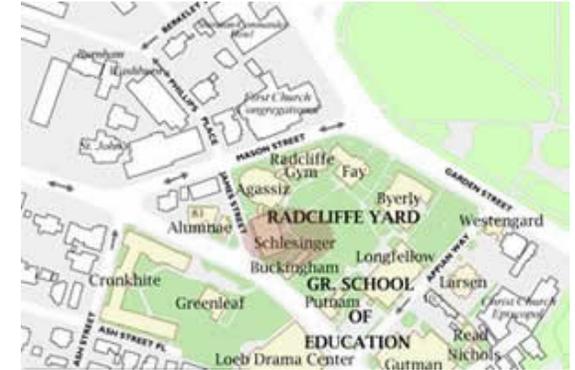
From the outset a major goal of the project was to minimize construction waste. Using a number of avenues, the project was able to not only recycle most of the construction waste, but also be able to redistribute and donate a large portion of the furniture, cabinets, fixtures, and doors. This work, done in conjunction with Harvard University and the Institutional Recycling Network, allowed for a recycling rate of over 90%.

## Program Goals

The primary objectives of the project were to renovate library spaces and install new climate control systems for preservation of rare manuscripts and books.

Key goals in the renovation included:

- Improve the building systems to facilitate preservation of the collections
- Facilitate library staffing and function by consolidating service points and public access
- Improve building entry sequence and enable connectivity between public spaces in Radcliffe Yard buildings, including adding full accessibility
- Reclaim some of the building's historic significance and character



## Location

Schlesinger Library is located in Radcliffe Yard at Three James Street, on the corner with Brattle Street.

[See Google map location of Schlesinger.](#)

## Project Team

*Client:* Radcliffe Institute for Advanced Study

*Architect:* Venturi, Scott Brown and Associates

*Project Management:* Kate Loosian, HRES

*Mechanical Engineer:* Cosentini, Inc.

*Structural Engineer:* Keast & Hood Structural Engineers

*Contractor:* Richard White Sons

*Building Commissioning:* Facility Dynamics Engineering (Tim Scruby)

*Construction Waste Management:* Institutional Recycling Network

## Sustainable Strategies

### Site

**Open space preserved:** Schlesinger Library is one of three buildings at the head of historic Radcliffe Yard. The Yard is a park-like setting that has been an integral part of the Radcliffe and Harvard campuses for the last 100 years. The Yard is part of the Old Cambridge National Register District and lies within the Old Cambridge Local Historic District. Both the Cambridge Historical Commission and the Massachusetts Historical Commission must approve all exterior work and projects in the jurisdiction.

The students and faculty of Harvard use this space extensively. It is also used for numerous events, including graduation and homecoming. Given its integral nature and the required approvals from the Cambridge and Massachusetts Historical Commissions, the site should be well protected from any future encroachment and development.

To reduce the **heat island effect**, 32.2% of the site area is shaded.

**Alternative Transportation:** The site is located in close proximity to bus lines and the Harvard Square MBTA station. Bicycle storage and changing rooms for occupants are provided nearby.

### Energy

Energy use was designed to be 25% better than ASHRAE standards. An Energy Model for Schlesinger was developed by Cosentini. Building systems commissioning by Facility Dynamics Engineering ensured that systems were designed and installed for optimal performance. Green Power **Renewable Energy Certificates** were purchased to offset at least 50% of the predicted electricity use.

**Demand control ventilation:** Two carbon dioxide monitors and a DDC system use the variable frequency drive to modulate the amount of outside air, based on demand.

## Materials and Waste

The project retained 100% of the building shell and structural elements, and diverted 91.31% of its construction waste from landfills. This also earned the project a LEED Innovation credit. Of the 295 tons of waste generated, over 265 tons was diverted from a landfill through reuse or recycling. New uses were found for 25 tons of furnishings, moveable assets, and building materials, rather than recycling or disposing of them. This is the most efficient form of recycling, and benefits both the environment and community.

**Recycled content materials** are used for 5.65% of the materials (by cost), including 100% recycled carpet.

**Local Materials:** 27.61% of materials (by cost) were manufactured within a 500 mile radius.

**Recycling:** Because manuscripts and rare books are housed in the building, food and drinks are only allowed in the kitchen/lounge. In the kitchen space is a designated area for recycling glass, plastic, and metals. All these are combined in one receptacle and sorted at an off-site Harvard location.

Paper recycling is provided in each office and larger recycling containers are provided in the copy rooms. As part of Harvard's recycling program, the paper recycling containers in each space are sized to hold one week's worth of recycling. When additional pick-ups are required, a recycling hotline is available. For larger recycling consolidation there is a 166 square foot exterior location at the basement level.

Harvard Recycling collects recyclable paper, cardboard, cans and bottles in small side-loading compactor trucks that run 5 to 6 days per week. The cans and bottles go directly to FCR Recycling in Charlestown (approximately 3.7 miles away). The paper and cardboard collected by Harvard is tipped out into Save That Stuff's rear-load packer on campus. Once it is full, Save that Stuff picks it up and replaces the packer with an empty one. Harvard Recycling also sends out a box truck with lift gate to collect bulk or non-compactable reusables and recyclables such as clothing, computers, batteries, wood pallets, scrap metal, and mercury lamps. The reusable items are donated to local charities weekly at Surplus Distribution from the Recycling and Surplus Center in Allston (approximately 2.2 miles away). Computers, lamps and batteries were recycled through the Institution Recycling Network.

## Indoor Environmental Quality

An [Indoor Air Quality Management Plan](#) was implemented both during and after construction.

A two-week flush-out period was implemented after construction and prior to occupancy of the building. For this period a Minim Pleat Filtera MERV 13 filter was installed in the HVAC system and the system was set to run 24 hours a day at 100% outside air. After this was complete, the filter was replaced with a new filter of the same description. In addition, after the flush-out period and before occupancy, long-term VOC samples were taken on each floor of the building. The readings were all below detection (<10 parts per billion). Also real-time instruments were used to detect formaldehyde, ozone, and ultra-fine particles. These were all in the undetectable range.

Low-emitting paints, coatings, and carpets, and furniture systems protect the health of the occupants as well as the collections.

A [Schlesinger Green Cleaning Contract](#) was signed with Unicco. The contract includes using only chemical products certified by Green Seal, using equipment with dust control, and keeping a log on the coating and restoration of vct tile and carpets. The contract details green guidelines for dispensing and diluting cleaning products, maintaining entryways to prevent tracking dirt, dusting and dust mopping, floor care, restroom cleaning, general cleaning, and recycling procedures.

**Views are provided for over 90%** of spaces.

**CO2 Monitors:** Two CO2 monitors are installed in the HVAC system. One is located in the common return duct, and the other is located in the conference room. The DDC monitors the CO2 levels of both sensors. The DDC system varies the speed of the variable frequency drive of the outside AHU fan, which will modulate the amount of outside air supplied to the building.

## Water

Water consumption is **reduced by 21.47%** using low-flow lavatories.