HARVARD ART MUSEUM

GREEN is the new Crimson

SOMERVILLE SUPPORT SERVICES FACILITY

LEED-CI v2.0 SILVER 2009

200 INNERBELT, SOMERVILLE, MA 02143

The Somerville Support Services Facility project was undertaken by the Harvard Art Museum in 2008 and is a fit-out of 66,101 square feet of leased shell space at 200 Inner Belt Road in Somerville, Massachusetts. 200 Inner Belt Road is a four-story commercial building originally constructed in 2001.

The space contains collections storage, compact and refrigerated storage, curatorial and administrative offices, archives and research centers. Limited exterior work was performed to augment the rooftop HVAC system and replace conservation lab glass. Approximately 104 Harvard Art Museum employees occupy the second, third, and fourth floors in the north end of the building while the 32 Quincy Street facility in Cambridge, the former Fogg Art Museum and Busch-Reisinger Museum, undergoes a historic renovation. After completion of the 32 Quincy Street project, many of the occupants will return to Cambridge while roughly two-thirds of the Somerville space will remain occupied.

Photo: Harvard Art Museum, 2009

The Harvard Art Museum is committed to sustainability and the reduction of greenhouse gas emissions. Towards this end, the project team set goals to ensure compliance with the Harvard Green Building Guidelines and to pursue minimum LEED-CI Silver certification for the project.

PROJECT HIGHLIGHTS

LEED® Facts

Somerville Support Services Facility
Harvard Art Museum
2009

Location	Cambridge, Massachusetts
Rating System	Commercial Interiors v2.0
Certification	Silver
Total Points Attempted	30 / 57
Sustainable Sites	3/7
Water Efficiency	1/2
Energy and Atmosphere	7/12
Materials and Resources	7/14
Indoor Environmental Quality	7/17
Innovation and Design	5/5

16%	**reduction in lighting power by using efficient lamps and fixtures**
12%	**of the materials contain recycled content, by overall material value**
40,560	**gallons of water are estimated to be saved annually over code-maximum fixtures**
230	**tons of construction waste were diverted from landfills through recycling and salvage**
24%	**of the materials were manufactured within 500 miles of the project, by overall material value**
100%	**of the composite wood in the project is urea -formaldehyde free**

Only low or zero-VOC materials were used during construction.

A comprehensive thermal comfort survey will be given to occupants. The Harvard Art Museum will provide corrective action as deemed necessary.

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SITE

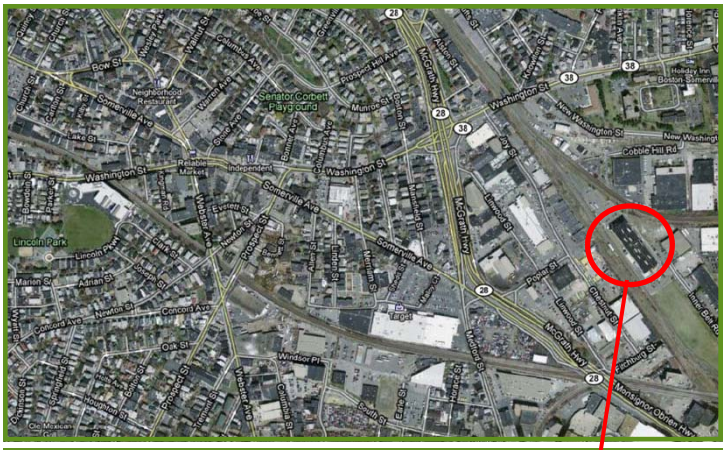

Photo: Cushman & Wakefield

- To reduce the greenhouse gas impact of driving, the Harvard University Shuttle provides transportation for all occupants in a circular route between the Harvard campus, the Sullivan Station MBTA T Stop, the Union Square MBTA Route 86 bus line, and 200 Inner Belt Road. The shuttle runs throughout the work day from 8 am—5:45 pm.
- The building is also located in close proximity to the MBTA Orange Line Community College subway station, the Lechmere station, and MBTA bus lines.
- Bicycle racks, changing rooms, and showers are provided for occupants who wish to bike to work.

Photos: Harvard Art Museum, 2009

PROJECT TEAM

Owner	Harvard Art Museum
Project Manager	URS Corporation
Architect	Solomon + Bauer Architects
Contractor	Skanska Construction
HVAC Engineer	Exergen Corporation
Commissioning Agent	Jacob Carter Burgess
Sustainability Consultant	Harvard Office for Sustainability Green Building Services

WATER EFFICIENCY

Restrooms are located on the center core of each of the floors in the building. Although restrooms were not within the project's scope of work, the building owner has installed water-efficient 0.5 gpm sink aerators, which **reduce domestic water consumption by 20.21% below standard EPAct 1992 fixtures.** This is the equivalent of saving over 40,560 gallons per year.

ENERGY EFFICIENCY

Heating and cooling needs are served by DX cooling, gas heating roof-top air handling units. Two units serve each floor, and the space is served by one of the two units for each floor. Therefore, the Museum's space is independent of the rest of the building systems. In addition, the fit-out added dedicated fresh air conditioning air handling units to pre-cool and humidify raw outdoor air in order to maintain the strict environmental requirements necessary for the storage of artwork.

MECHANICAL AND ELECTRICAL SYSTEMS

The primary function of the space is art museum collection storage and art restoration. The hours of operation occur primarily during daylight hours. Due to the nature of a museum collection storage facility, there is minimal natural light allowed in the building to protect the museum collection.

- **LIGHT FIXTURES** All lighting fixtures in the building use fluorescent lamps except where required for art preservation. The total renovated space lighting power density (watts/sf) is 16% better than ASHRAE 90.1-2004.

  In each **enclosed office**, the lighting consists of ceiling-recessed 2'x2' or 2'x4' lighting fixtures, which are 92% efficient and use linear fluorescent lamps. In each **open office**, the lighting consists of four rows of 86% efficient linear pendant-mounted fixtures.

- **LIGHTING CONTROLS** All lighting fixtures within each office, conference room, lounge, storage room, and janitor's closet, are controlled by individual switching.

  In the **enclosed offices**, lighting fixtures are controlled by an ultrasonic occupancy sensor to automatically shut off lighting when the room has been unoccupied for fifteen minutes. Lighting in each room is controlled by two switches to provide occupants with manual control of two levels of lighting.

  In the **open offices**, the lighting fixtures are controlled by a dual-technology occupancy sensor to automatically shut off lighting when the room has been unoccupied for fifteen minutes. The lighting is controlled by five lighting control switches. The control switches give the occupants the ability to adjust the light manually for different uses.

- **BUILDING AUTOMATION SYSTEM** Corridor and lobby lighting is controlled by a computer-based building lighting management system. The system allows the owner to automatically turn off all lighting when the building is scheduled to be unoccupied, and allows for decreased lighting levels during nighttime hours.

- **PLUG LOAD** Energy Star and energy-saving equipment is included in a communal break room with two refrigerators, a coffee machine and two microwaves, as well as in five shared business centers equipped with printers, copiers and fax machines. The Harvard Art Museum does not allow space heaters, fans, personal refrigerators, coffee makers or microwaves. Departmental or personal printers are only allocated based on volume or confidentiality concerns.

- **COMMISSIONING** is the process of achieving, verifying and documenting the performance of facility systems in accordance with the design intent and the client's functional and operational needs. Commissioning for this project began during the Design Phase and continued through the Construction Phase, the Testing/ Training Phase and the Occupancy Period. Due to the design intent of this facility, it was critical that the systems function properly and interactively to help ensure safety and security for the facility occupants. The following systems were commissioned:

  Air Handling Units, VAV Terminal Units
  Exhaust Fans, Fan Coil Units / Unit Heaters
  Fume Hood Air Flow Stations
  Chilled Water Distribution System
  Modular Chillers
  Air Cooled Condensers
  Heating Water Distribution System, Boilers
  Emergency Power Distribution System
  Lighting Control System
  Building Automation System
  Fire Alarm System
  Tenant Domestic Hot Water Systems
  Security Surveillance Network

- **RENEWABLE ENERGY** Renewable Energy Certificates (RECs) were purchased from Sterling Planet (wind power) equivalent to 100% of the anticipated electricity use based on LEED default assumptions. 2117 MWh of RECs were purchased over two years, which is equivalent to the amount of carbon dioxide absorbed annually by protecting 342 acres of forest and prevents the emission of 1507 metric tons of carbon dioxide.

Photos: Harvard Art Museum, 2009

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INDOOR ENVIRONMENTAL QUALITY

The project team was careful to maintain healthy indoor air quality during construction but to also ensure the space was designed to ensure healthy indoor air quality during occupancy. The primary programmatic requirements of the space—collections restoration and storage—also dictated the careful selection of materials to ensure optimal conditions,

Only products with **low or zero VOC content** were used in the Somerville Support Services Facility project. Volatile Organic Compounds (VOCs) are chemical compounds and known carcinogens found in many construction materials that are considered detrimental to healthy indoor air quality. Reducing the use of VOCs whenever possible improves indoor air quality and consequently occupant health and productivity. VOC limits are set by Green Seal standards and the South Coast Air Quality Management District Rules #1168 and #1113. Additionally, Harvard Art Museum contracts with a company to maintain a comprehensive **green cleaning program.**

- **COMPOSITE WOOD AND LAMINATE ADHESIVES:** All of the composite wood is free of urea formaldehyde.
- **ADHESIVES AND SEALANTS:** All adhesives and sealants used in the project have low VOC content. Some products used in the project are shown below.
- **PAINTS AND COATINGS:** All paints and coatings used in the project have low VOC content.

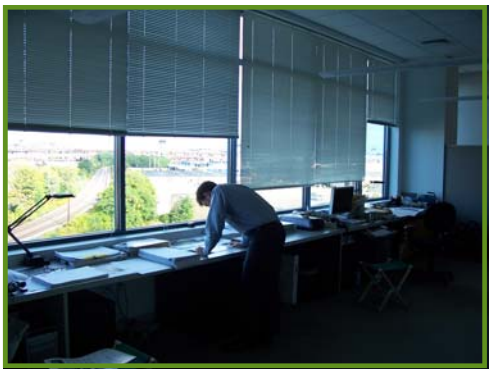

Photo: Harvard Art Museum, 2009

Product & Manufacturer	VOC Content (g/l)	VOC Limit (g/l)	Standard
Shaw #5000 Carpet Adhesive	0	50	SCAQMD Rule #1168
3M Brand Fire Barrier CP-25WB	0	50	SCAQMD Rule #1168
Dow Coring 795 Sealant	40	250	SCAQMD Rule #1168
PPG 9-300 Zero VOC Eggshell	0	50	Green Seal GS-11

OCCUPANT ENGAGEMENT

Harvard Art Museum has developed an educational outreach program that focuses on sustainable living and uses the Somerville Support Services Facility as a living example of sustainable practices. The Green Team education program focuses on the staff members who work for the Harvard Art Museum.

In order to kick-off the program, the Harvard Art Museum sent out an email asking for staff members to volunteer and join their Green Team, a group organized to discuss issues related to sustainability and the environment, as well as proactively promote occupant environmental awareness and responsibility. The first meeting of the Green Team included a presentation describing the office's commingled recycling program, and talks from two campus leaders of sustainability.

Green Team members create posters, send informational emails, and host events with environmentally-friendly themes. Harvard Art Museum staff knows to direct their questions concerning building operations or environmental issues to the Green Team and that they will follow-up and get the correct information.

Additionally, the Harvard Art Museum Green Team maintains a highly-visible bulletin board in the Somerville space to provide a source of continual learning.

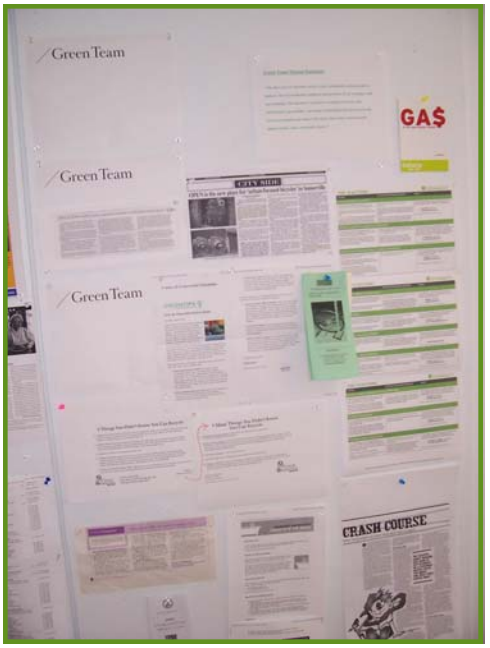

Photo: Harvard Art Museum, 2009

Please print this project profile only if necessary.
If printing is required, please print double sided and recycle when finished. Thank you!

MATERIALS AND WASTE

Selecting environmentally preferable materials and minimizing the amount of construction waste sent to landfills was important to the project. When selecting materials, preference was given to locally manufactured, low-emitting materials with recycled content.

81% of the construction waste was diverted from landfills (230 tons).

12% of the total material value consists of post-consumer and/or pre-consumer recycled content materials.

100% of the wood is Forest Stewardship Council (FSC) Certified.

100% of the composite wood is free of urea-formaldehyde.

76% of the furniture, by replacement value is used/ salvaged.

Photo: Harvard Art Museum, 2009

ENVIRONMENTALLY PREFERABLE MATERIALS AT SOMERVILLE SUPPORT SERVICES FACILITY

- Gypsum Wallboard (USG): 94% post-consumer, 5%, pre-consumer, 328 miles (manufacture)
- Wall Insulation (CertainTeed): 25% post-consumer
- Particleboard (Uniboard NuGreen): 100% pre-consumer, urea-formaldehyde free
- MDF (Sierra Pine): 100% pre-consumer, urea-formaldehyde free
- Carpet (Shaw): 38% pre-consumer
- Ceiling Tile (Armstrong Ultima 1911): 15% post-consumer, 65% pre-consumer, 326 miles (manufacture)
- Ceiling Grid (Steel Dynamics): 84% post-consumer, 16% pre-consumer, 326 miles (manufacture)
- Steel (Steelcase Universal): 22%, 6% post-consumer, 20% pre-consumer, SCS certified

Additionally, the Harvard Art Museum provides occupants with single-stream recycling. Recycling containers are located in each private office, as well as at each workstation. Bins are also located in the break rooms, common areas and conference rooms.

ADDITIONAL RESOURCES

FOR MORE INFORMATION:

> Harvard Art Museum: http://www.artmuseums.harvard.edu/
> Harvard Central Administration Sustainability: http://green.harvard.edu/cadm
> Harvard Green Office Certification Program: http://green.harvard.edu/green-office/certification
> Harvard Green Building Services: http://green.harvard.edu/green-building-services
> Harvard Green Building Resource: http://www.green.harvard.edu/theresource