

HARVARD UNIVERSITY

LEED-NC v3

HARVARD BUSINESS SCHOOL—DEAN’S HOUSE

LEED SILVER

51 Harvard Way, Boston, MA 02163

This project encompassed the renovation of the Dean’s Residence located on the Harvard Business School (HBS) campus in Boston. It consists of a four story structure with a total area of 11,000 square feet. The purpose of this project was to correct numerous deferred maintenance issues and to make space alterations and interior updates to prepare the Dean’s House for occupancy by the new HBS Dean and his family as well as provide space for hosting social functions and events for HBS. The original facility was constructed in 1929 but was last occupied as a residence in the 1970s. The 82-year old brick masonry building had an exterior upgrade completed in 2008. At that time only the kitchen was upgraded to replace flooring, cabinets, and appliances in the interior of the building.



Prior to 2008, the last major renovation to the house occurred in the early 80’s, but many of the major systems were not touched. As a result there were significant deferred maintenance issues that warranted addressing. These issues involved all the major building systems – heating, ventilation and air conditioning, electrical primary feeds, transformers and panel distribution, fire alarm system expansion, and the addition of sprinklers to the boiler room. Many of these systems were well over 30 years old and had reached the end of their useful life expectancy.

The facility now serves as a model for updating a historic building to contemporary standards of sustainability and resource conservation while highlighting Harvard Business School’s commitment to the environment.

HBS—Deans House
Photo: Harvard Business School

PROJECT HIGHLIGHTS

LEED® Facts

HBS—Dean’s House
Harvard University
2011

Location.....Boston, MA
Rating System.....LEED-NC v3
Certification Achieved.....Silver
Total Points Achieved.....50/110

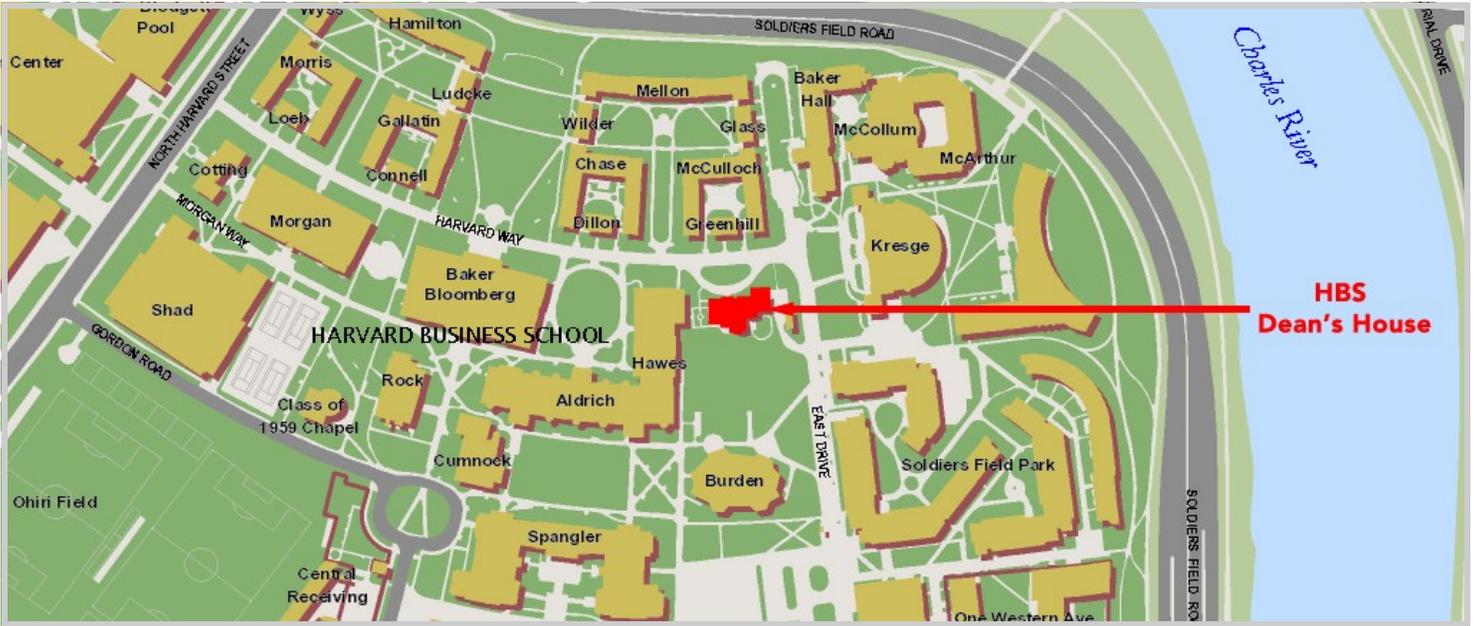
Sustainable Sites.....16/16
Water Efficiency.....0/5
Energy and Atmosphere.....15/28
Materials and Resources.....6/6
Indoor Environmental Quality.....8/9
Innovation and Design.....4/5
Regional Priority.....1/4

22.5%	reduction in water use compared to an EPA 1992 baseline
24.9%	reduction in energy consumption when compared to ASHRAE 90.1-2007 baseline
3.7 years	of the expected electricity consumed by the facility is offset by wind power renewable energy credits (RECs)
89%	of the total construction waste from this project was diverted from the landfill





PROJECT DRAWINGS AND IMAGES



MAP

IMAGE: HARVARD GREEN BUILDING SERVICES



ELEVATION

IMAGE: BAKER DESIGN GROUP

PROJECT TEAM

Owner	Harvard Business School
Architect	Baker Design Group
Contractor	Lee Kennedy and Co.
Design Engineer	BLW Engineers, Inc.
Cx Authority	Commissioning Agents Inc.



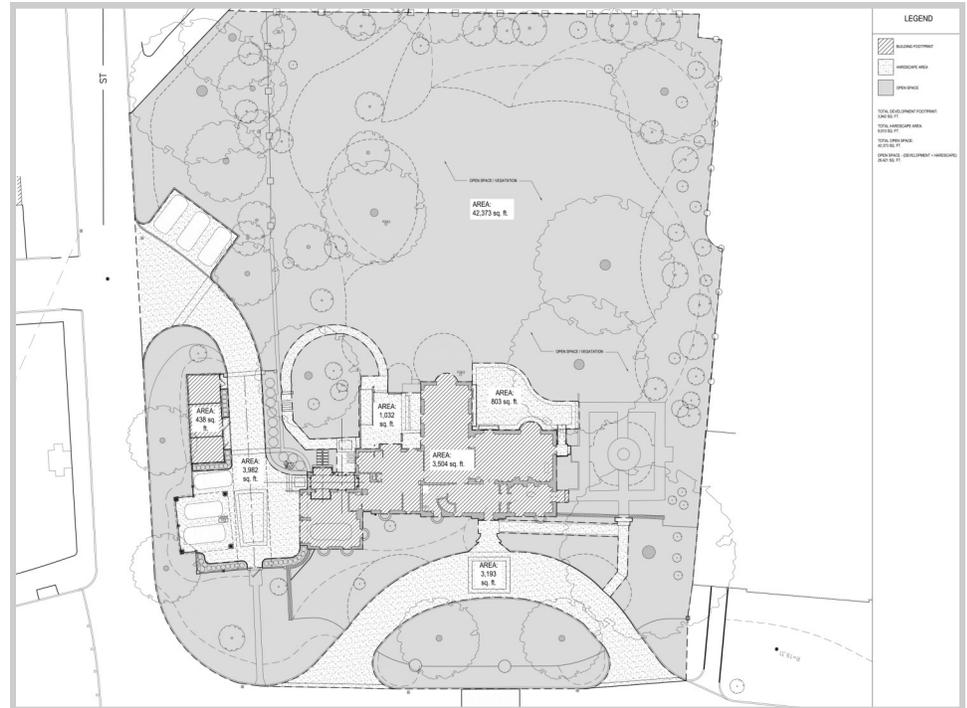
SITE AND LANDSCAPING

Located in the heart of the Harvard Business School campus in Allston, this building is well connected to many basic services that can be accessed via walking or biking.

The house is within a quarter mile of both Harvard University campus and MBTA bus lines.

Bike storage is ample and well protected from the environment, including both a covered storage shed in the exterior grounds and dedicated areas in the garage.

The site is well landscaped, shading much of the site hardscape and the building itself, both of which help to reduce cooling loads in the summer heat.



HBS - Deans House Site Plan

SITE VEGETATION:

FROM LEFT TO RIGHT

- HONEY LOCUST**.....(*GLEDITSIA TRIACANTHUS*)
- SUMMER CAMELLIA**.....(*PSUEDOCOMELLIA*)
- BEECH**.....(*FAGUS*)



MALUS

- JAPANESE MAPLE**.....(*ACER PALMATUM*)
- PRINCETON**.....(*ULMUS AMERICANA*)



- WESTERN RED CEDAR**.....(*THUJA PICANTA*)
- PIN OAK**.....(*QUERCUS PALUSTRIS*)



ENERGY EFFICIENCY

The Harvard Business School has committed, along with Harvard University as a whole, to reduce greenhouse gas emissions 30% below 2006 levels by 2016, inclusive of growth. Therefore energy efficiency was a main goal of this renovation project.

MECHANICAL SYSTEMS

ECM 1: Natural Ventilation—Most of the spaces at the Dean’s House contain large operable windows that meet ASHRAE 62.1 requirements for naturally ventilated space and help to reduce consumption costs associated with mechanical ventilation systems.

ECM 3: Increased Insulation—The insulation values for all components of the building envelope significantly exceed what is required by code, resulting in lower heating and cooling loads than what would be encountered otherwise.

ECM 3: Outdoor Air Temperature Resets—The boilers supplying heating for the house reduce their temperature setpoints based on the outdoor air temperature (OAT), increasing the supply temperature as OAT decreases.

ECM 4: Occupancy-Based HVAC Controls—Fan coil units in the Dean’s House will operate in conjunction with occupancy sensors in each space to enable setbacks whenever people are not currently using a room. This will significantly reduce the need for heating and cooling in certain event spaces and guest rooms.

ELECTRICAL SYSTEMS

ECM 1: Low Power Lighting—Using the ASHRAE 90.1-2007 “Space by Space” lighting calculation method, the Dean’s House lighting power density of 0.92 W/sf outperforms the baseline by 18%.

ECM 2: Occupancy Controlled Lighting—Similar to ECM4 in the Mechanical Systems section, the same occupancy sensors will also regulate whether power is supplied to lighting in each space, further reducing electricity consumption.

ECM 3: Variable Frequency Drive (VFD) on HVAC Pump—The primary pumps controlling the heating hot water service can modulate to meet the aggregate demand of each space, reducing energy consumption while providing increased comfort to the building.

INDOOR ENVIRONMENTAL QUALITY

The Harvard Business School is committed to providing a healthy indoor environment for all occupants. The project team was careful to maintain healthy indoor air quality during construction and to also ensure the space is designed to promote healthy indoor air quality during occupancy. Through the use of low VOC products, the Dean’s House satisfied all LEED requirements for low emitting paints, adhesives and sealants.

Product Category	Product & Manufacturer	VOC Content (g/l)	VOC Limit (g/l)	Standard
Paints / Coatings	➤ Benjamin Moore / Regal—Primer	16	200	Green Seal GS-11
	➤ Benjamin Moore / Eco Spec - Flat	0	50	Green Seal GS-11
	➤ Benjamin Moore / Regal — Eggshell	83	150	Green Seal GS-11
Adhesives / Sealants	➤ Contact Adhesive / Forbo Flooring INC(L-910 Linol)	0	80	Green Label Plus
	➤ Contact Adhesive / Forbo Flooring INC (L-910 MA)	1	80	Green Label Plus

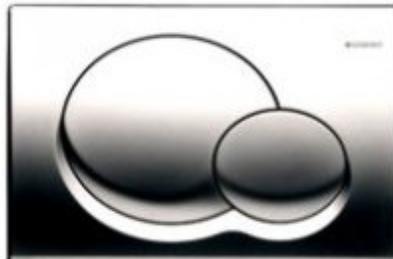


Please note that while many products are described in this project profile, these are provided for informational purposes only to show a representative sample of what was included in this project. Harvard University and its affiliates do not specifically endorse nor recommend any of the products listed in this project profile. Harvard University, its affiliates, and/or trademarks may not be used in commercial or political materials, advertisements, emails, products, promotions that in any way suggests approval or endorsement of Harvard University. All photos below are from manufacturer websites.

WATER EFFICIENCY



Kelston Toilet
1.28 gal per flush
Kohler



Samba Dual Flush Actuator
1.6 high / 0.8 low gal per flush
Geberit (toilet not shown)



San Rafael Pressure Asst.
1.0 gal per flush
Kohler

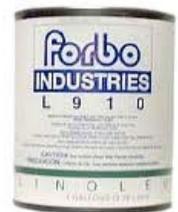
LOW EMITTING MATERIALS



Regal - Primer
68 grams per liter TVOC
Benjamin Moore

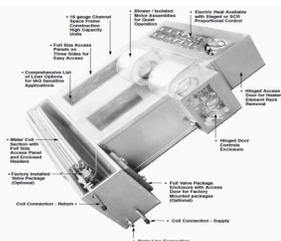


EcoSpec Paint
0 grams per liter TVOC
Benjamin Moore

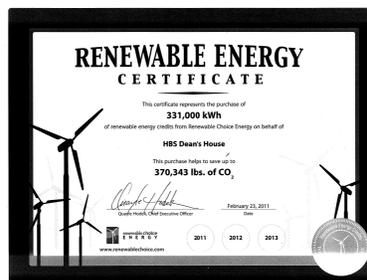


L910 Contact Adhesive
1 gram per liter TVOC
Forbo Industries

ENERGY AND ATMOSPHERE



**Fan Coil Units w/
Premium Efficiency Motors**
Engineered Comfort



REC Purchase
331 MWh total
Renewable Choice Energy



CI-12 Occupancy Sensor
HVAC/BAS Compatible
Wattstopper

ADDITIONAL RESOURCES

- > **Harvard Business School:** <http://www.hbs.edu/>
- > **Dean—Harvard Business School:** <http://www.hbs.edu/dean/>
- > **Harvard Green Building Resource:** <http://green.harvard.edu/theresource>
- > **Harvard Green Building Services:** <http://green.harvard.edu/green-building-services>
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