

GUTMAN LIBRARY RENOVATION (1ST & 2ND FLOOR)

LEED PLATINUM

6 APPIAN WAY, CAMBRIDGE, MA

LEED FOR COMMERCIAL INTERIORS V.2009

PROJECT PROFILE

PROJECT COMPLETE: SUMMER 2012

The intent of the approximately 36,000 square foot first and second floor renovation of Gutman Library was to create a campus center to serve as a natural hub and campus gathering space for faculty, staff and students of Harvard's Graduate School of Education (HGSE). Achieving this goal entailed: condensing book stacks and periodical collections and moving the library offices, including the Circulation and Reference areas, along with the microfiche collection from the first floor to the second floor. With the first floor becoming a "blank slate" the project team created a collection of spaces that has become a hub for HGSE's community including: a full service cafe (The Commons at Gutman Library) with indoor and outdoor seating, the Marie and Max Kargman Garden lounge, soft seating/reading areas, flexible community/presentation space, and lounge areas complete with working fireplaces. In addition to the programmatic improvements, the project addressed some of the outstanding renewal issues with the mechanical, electrical, and plumbing (MEP) systems.



Photo: copyright Harvard Graduate School of Education, 2012

Since project conception, sustainability was an important driving force behind all design and construction decisions, due to the large MEP scope and the energy intensive mechanical systems traditionally associated with this type of kitchen. The HGSE looked beyond LEED requirements and focused on the overall impact this project would have on the School's greenhouse gas (GHG) emissions; therefore, life cycle costing, GHG emission calculations and energy modeling were all utilized to make informed decisions when selecting new systems to install as part of the project from the lighting to the refrigeration units used for the café.

LEED® Facts

Harvard University
Graduate School of Education
Gutman Library, 1st and 2nd Floor



Location.....	Cambridge, MA
Rating System.....	LEED-CI v2009
Certification Achieved.....	Platinum
Total Points Earned.....	83/110
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Sustainable Sites.....	19/21
Water Efficiency.....	6/11
Energy and Atmosphere.....	30/37
Materials and Resources.....	9/14
Indoor Environmental Quality.....	10/17
Innovation and Design.....	6/6
Regional Priority.....	3/4

PROJECT METRICS

- 18%** lighting power reduction below ASHRAE Standard 90.1-2007
- 26%** regionally extracted (within 500 miles) value as a percentage of total materials cost
- 96%** construction waste diverted from landfill via recycling and reuse
- 36%** regional materials (manufactured within 500 miles) value as a percentage of total materials value.
- 38%** salvaged or reused furniture value, as a percentage of total furniture cost



ENERGY EFFICIENCY

The Harvard Graduate School of Education (HGSE) has committed, along with Harvard University as a whole, to reduce greenhouse gas emissions 30% below 2006 levels by 2016, inclusive of growth. Therefore, the following energy conservation measures (ECMs) were implemented as part of the Gutman Library project.

ELECTRICAL SYSTEMS

Occupancy Sensors - Occupancy sensors are installed in all spaces to turn the lights on, or off, based on actual occupancy.

Daylight Sensors - Daylight sensors are installed in all perimeter rooms that contain windows. These sensors dim the lighting up or down in response to the amount of sunlight entering the space.

Reduction in Lighting Power Density - The project achieved an 18% reduction in lighting power density (watts/square foot) when compared to ASHRAE 90.1-2007 baseline. Reduction was achieved through the use of LEDs and high efficiency linear fluorescent lamps installed in high efficiency fixtures.



Library Circulation



Photo: copyright HGSE, 2012 Café Servery

Photo: copyright HGSE, 2012

MECHANICAL SYSTEMS

Halton M.A.R.V.E.L. - (Model based Automated Regulation of Ventilation Exhaust Levels) The M.A.R.V.E.L. system automatically controls the speed of the exhaust fan (and supply fan if applicable) based on appliance status, cooking activities and exhaust air temperatures.

Multistack Heat Recovery Chiller - Due to high heat loads in commercial kitchens, refrigeration and air conditioning are typically the highest energy consumers because they have to work harder to maintain their low temperature set-points. To combat this issue, the project installed a multistack heat recovery chiller and dry cooler systems that centralize the multiple refrigeration loads in the kitchen and café, makes use of environmentally friendly glycol solutions rather than ozone depleting refrigerants, and allows recovery of a significant portion of the heat coming off of the refrigeration equipment.

Reuse of Waste Heat - When the outdoor air temperature is below 50°F, the dedicated air handling unit serving the kitchen hoods captures and reuses the waste heat from the refrigeration equipment (the multistack heat recovery chiller) to pre-heat the supply air.

Active Chilled Beams - In a chilled beam system, cool air is delivered efficiently to the space via convection where warm air rises and is cooled by the chilled beam; once it's cooled, the cool air falls back to the floor. Active chilled beams are quiet, efficient and have low maintenance requirements because they have no moving parts within the individual units.

Demand Control Ventilation - The volume of outside air supplied to all multi-occupant spaces is controlled by a CO₂ sensor. The CO₂ sensor increases ventilation rates as it senses an increase in CO₂ levels, which occurs as more people occupy the room. This allows energy conservation by only supplying increased ventilation when necessary rather than continuously operating at maximum capacity whether or not it is necessary.

Occupancy Sensors - Occupancy sensors are installed in all spaces to set back the temperature to predetermined unoccupied set-points. The sensors also reduce ventilation rates and turn off the fan coil unit fans in unoccupied mode.

PRODUCTS AND MATERIALS

Highlights

- **15% recycled content** value as a percentage of total materials cost
- **36% regionally manufactured** (within 500 miles) value as a percentage of total materials cost
- **26% regionally extracted** (within 500 miles) value as a percentage of total materials cost
- **54% Forest Stewardship Council (FSC) certified wood** value as a percentage of new wood materials cost
- **38% salvaged and reused Furniture** value as a percentage of total furniture cost
- **Only low-VOC, or no-VOC** adhesives, sealants, paints and coatings were used



Bloom Carpet Tile¹

Shaw Contract Group

- * 13% Post-consumer Recycled Content
- * 31% Pre-consumer Recycled Content
- *CRI Green Label Plus Certified
- * MBDC Cradle-to-Cradle Certified



NuGreen 2 Particleboard

Uniboard

- * 100% Pre-consumer Recycled Content
- * FSC Certified
- * No added urea formaldehyde (NAUF)



Interlude XL HRC Steel Ceiling Grid

Armstrong

- * 50% Post-consumer Recycled Content
- * 11% Pre-consumer Recycled Content
- * Regionally Manufactured: Aberdeen, MD



ProStud Steel

ClarkDietrich

- * 25.9% Post-consumer Recycled Content
- * 5.9% Pre-consumer Recycled Content
- * Regionally Manufactured: Bristol, CT
- * Regionally Extracted: Fairless Hills, PA



Setu Chair

Herman Miller

- * 23% Post-consumer Recycled Content
- * 22% Pre-consumer Recycled Content
- * GREENGUARD® Certified
- * MBDC Cradle-to-Cradle Certified



Metal Split [Door] Frame¹

de LaFontaine

- * 20% Post-consumer Recycled Content
- * 38% Pre-consumer Recycled Content
- * Regionally Manufactured: Sherbrooke, Quebec



372 WB EcoSpec Primer

Benjamin Moore

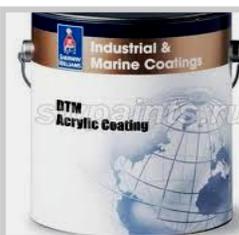
- * VOC Content = 0 g/L vs. VOC Limit = 50 g/L
- * Regionally Manufactured: Montvale, NJ



Ultrabond Eco 575: Wall-base adhesive

MAPEI

- * VOC Content = 0 g/L vs. VOC Limit = 50 g/L



DTM Acrylic Primer/ Finish Anti-corrosive/Anti-Rust Paint

Sherwin Williams

- * VOC Content = 150 g/L vs. VOC Limit = 250 g/L



Airseal #22: Polymer Adhesive

Sealant Systems, Inc

- * VOC Content = 35 g/L vs. VOC Limit = 420 g/L

Unless otherwise indicated all product images are from the manufacturer's website.

¹ Photo copyright Baker Design Group, 2012 - Image of product as installed in project space.

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 and this profile may not be used in commercial or political materials, advertisements, emails, products, promotions that in any way suggests approval or endorsement of Harvard University.

PRODUCTS AND MATERIALS

LIGHTING AND CONTROLS

- **18% Reduction** in lighting power density (watts/square foot)
- **Daylight Sensors** are installed in all spaces within 15 feet of windows



Omega LED 1,000 Lumen Cylinders Model #RV7-90

Philips

- * Total fixture wattage = 20 Watts
- * Remote phosphor technology provides increased efficiency and color stability by redirecting back reflected light.



Dual Technology Ceiling Sensors DT-300 Series

WattStopper

- * Walk-through mode turns lights off if occupancy not detected.
- * Passive infrared and ultrasonic sensors.
- * Integrated daylight sensor

ENERGY EFFICIENT KITCHEN EQUIPMENT

91% of the equipment purchased for the project is **ENERGYSTAR RATED** (by rated power).



advansys Ventless Door-Type Dishwasher - Model #AM15VL-2

Hobart

- * ENERGY STAR®
- * Energy recovery pre-heats inlet water to 140deg
- * Eliminates need for ventilation hood
- * Uses only .74 gallons of water per rack



Frymaster H55 - High Efficiency Gas Fryer

Manitowoc Foodservice

- * ENERGY STAR®
- * EnerLogic™
- * Infrared burners ensure state-of-the-art heat transfer

WATER EFFICIENCY

36% Reduction in annual water use (13,950 gallons/year) when compared to EPA 1992 baseline standard



G2 Optima Plus® Flushometer Model #8111

Sloan

- * 1.28 gallons per flush (gpf)
vs. EPA 1992 baseline of 1.6 gpf



Low Flow Pre-Rinse Spray Valve Model #B-0107-C

T&S Brass and Bronze

- * 0.65 gallons per minute (gpm)
vs. EPA 1992 baseline of 1.6 gpm.

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If printing is required, please print double sided and recycle when finished. Thank you!

INNOVATIVE STRATEGIES

Prefabrication of electrical assemblies - Off-site prefabrication of electrical assemblies and the implementation of lean production management practices effectively mitigates construction waste and reduces carbon emissions resulting from jobsite mobilization and fabrication. Pre-fabricated assemblies shipped directly to the job site from the warehouse in reusable hampers and were ready for install with no material packaging and/or scrap material left behind. In the warehouse, all spare pieces (electrical components, fittings, lamps, spools, miscellaneous hardware, etc) are saved, and reused when possible, rather than tossed into a dumpster on the jobsite if they were not used in the field.

Bottle Filling Stations - To encourage the use of reusable bottles and cups, bottle filling stations were installed on each floor in the same location as water fountains.



Photo: copyright Baker Design Group, 2012



Photo: copyright Baker Design Group, 2012

PROJECT TEAM

Owner	Harvard Graduate School of Education
Project Manager	Harvard Graduate School of Education
Architect	Baker Design Group, Inc.
MEP Engineer	BLW Engineers, Inc.
Contractor	Richard White Sons. Inc.
Commissioning Authority	Energy Management Associates, Inc.
Sustainability Consultant	Harvard Green Building Services

MORE INFORMATION

- > Harvard Graduate School of Education: <http://www.gse.harvard.edu>
- > Harvard - Green Building Services: <http://green.harvard.edu/green-building-services>
- > Harvard - Green Building Resource: <http://green.harvard.edu/theresource>
- > Follow Green Building Services: <http://www.facebook.com/HarvardGBS> or @Harvard_GBS

