HARVARD
School of Engineering and Applied Sciences

GREEN is the new Crimson

HARVARD SCHOOL OF ENGINEERING AND APPLIED SCIENCES

SEAS IT OFFICE RENOVATION

MAXWELL DWORKIN BUILDING, 33 OXFORD ST. , CAMBRIDGE, MA 02138

LEED-CIv2.0
GOLD

In support of Harvard's goal of reducing greenhouse gas emissions 30% below 2006 levels by 2016, inclusive of growth, Harvard University's School of Engineering and Applied Sciences (SEAS) and the project team were committed to sustainability from the onset of the Computing and Information Technology (IT) Office renovation. This dedication ultimately allowed the project to achieve a LEED Gold Certification under the LEED for Commercial Interiors (LEED-CI) version 2.0 rating system, making it Harvard's 38th LEED Certified project.

SEAS IT supports the School's research, administrative and teaching communities by installing and maintaining effective technology through the provision of numerous measures, such as: providing a stable Computing Infrastructure and support for teaching, learning and research; maintaining operational efficiency; managing communication and messaging; and managing fiscal controls and appropriate resource allocations.

The renovation converted 2,003 sq. ft. of lounge space into office spaces to accommodate the IT staff and services. The offices are on the ground and second floors of the 97,500 square foot Maxwell Dworkin building at 33 Oxford Street in Cambridge, MA. Completed in March 2009, the main program elements included 5 private offices and 3 open office areas divided between three locations (G107, G121 and 211). The scope of the renovation included new furnishings, lighting, windows, millwork, electrical, tel-data, and audio visual (AV) system. Harvard's Green Building Guidelines and the LEED-CI rating system played an important role, such as guiding the selection of more sustainable materials and the mechanical, electrical and plumbing (MEP) systems for the project.

Main IT Office - G107
Photo: Doug Okun and Associates, 2009

PROJECT HIGHLIGHTS

LEED® Facts

SEAS IT Office Renovation
Harvard School of Engineering and Applied Sciences
2009 Renovation

Location	Cambridge, Massachusetts
Rating System	Commercial Interiors v2.0
Certification	Gold
Total Points Earned	34 / 57
Sustainable Sites	5/7
Water Efficiency	2/2
Energy & Atmosphere	4/12
Materials & Resources	6/14
Indoor Environmental Quality	12/17
Innovation and Design	5/5

41% reduction in water consumption over EPAct 1992 compliant fixtures

78% of the equipment and appliances are Energy Star® rated

15% reduction in installed interior lighting power density (watts/square feet) below the code standard.

84% of all construction and demolition waste was diverted from landfills.

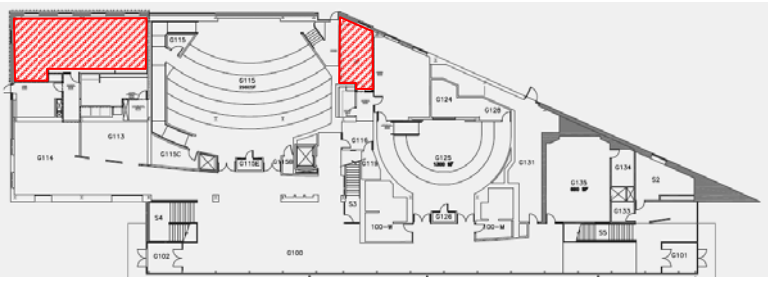
56% of the total material value consists of products manufactured locally.

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

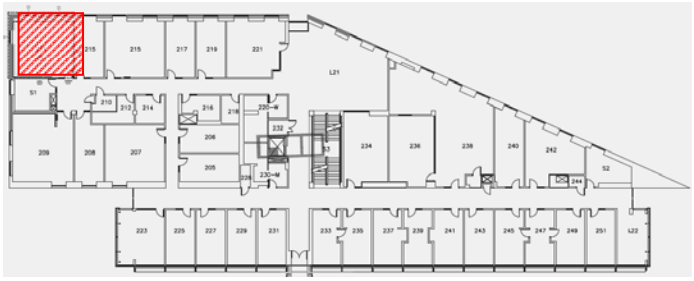
PROJECT OVERVIEW

Maxwell Dworkin Building

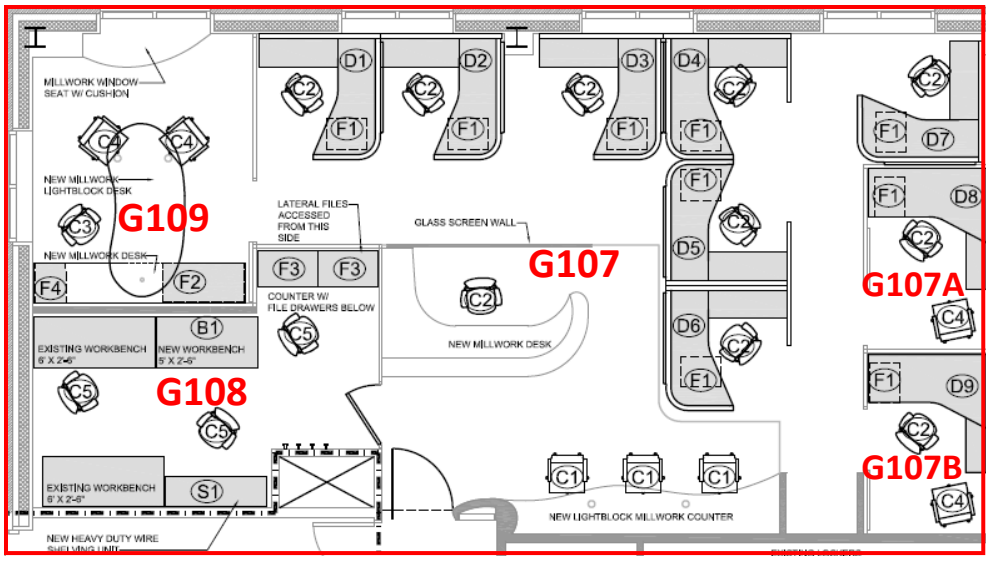
Ground Floor



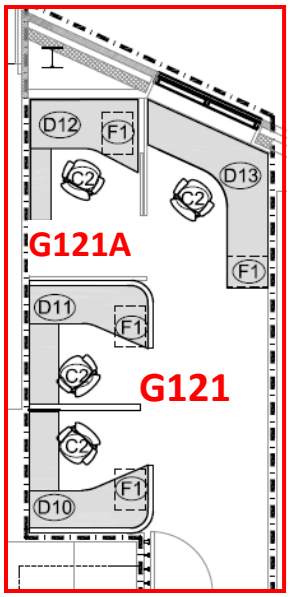
Second Floor

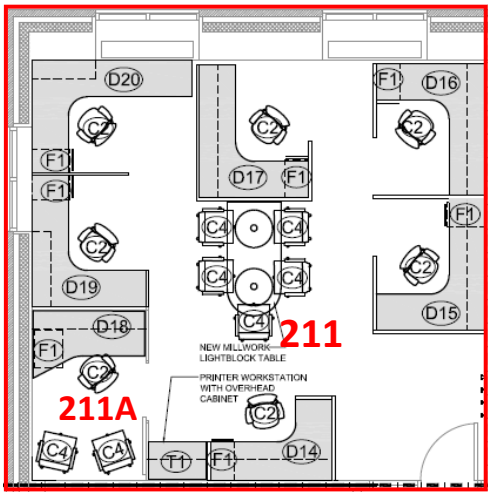


SEAS IT FLOOR PLAN & LEED BOUNDARY



Ground Floor Furniture Plan





Second Floor Furniture Plan

PROJECT TEAM

Owner & Project Manager	Harvard University School of Engineering and Applied Sciences
Architect	Douglas Okun and Associates
Contractor	Elaine Construction
HVAC Engineer	R.G. Vanderweil Engineers, LLP
Commissioning Authority	R.G. Vanderweil Engineers, LLP
Sustainability Consultant	Harvard University, Office for Sustainability Green Building Services

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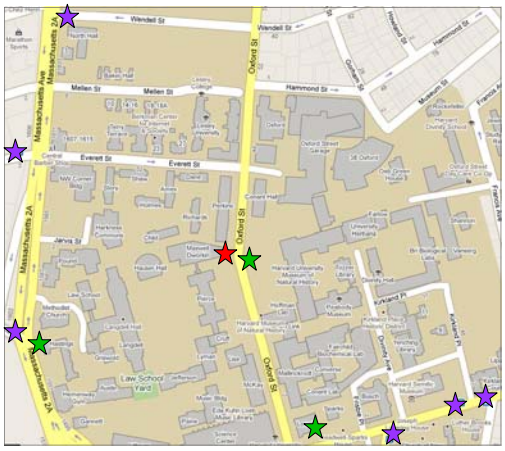
SITE

Maxwell Dworkin Building
33 Oxford St., Cambridge, MA 02138

- To encourage alternatives to driving, all occupants of the Maxwell Dworkin Building have access to Harvard's comprehensive ***CommuterChoice Program***, which provides incentives and discounts for all modes of alternative transportation as well as carpooling and fuel efficient vehicles.
- The building is located within walking distance to multiple MBTA bus stops and Harvard University shuttle bus service.
- 4 bicycle racks with a total capacity of 50 bicycles are located 10 yards from the entrance of the Maxwell Dworkin building for use by the building's occupants. Showers and changing facilities are located within the facility.
- The building is located in a dense urban area, which allows occupants to easily access amenities such as restaurants, banks, churches and retail.



Bike Racks
Photo: Elliott Richmond. 2010

WATER EFFICIENCY

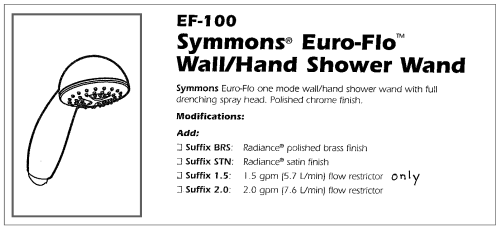
Per LEED requirements, if a project boundary does not include bathrooms, calculations must be for the fixtures in the closest bathroom.

SEAS went one step further than the LEED requirement and, in conjunction with this project, upgraded all of the bathrooms in Maxwell Dworkin. This building-wide bathroom upgrade will **reduce domestic water consumption by 41% over standard EPAct 1992 fixtures.** This is the equivalent of saving over 268,125 gallons per year.

Differences in the Flush & Flow Rates for EPAct 1992 Standard fixtures and the fixtures utilized by Maxwell Dworkin Occupants:

Fixture Type	SEAS IT Office Flush & Flow Rates	EPAct 1992 Standard Flush & Flow Rates
Water Closet [GPF]	1.1 or 1.6	1.6
Urinal [GPF]	0.5	1.0
Bathroom Sink [GPM]	0.5	2.5
Shower [GPM]	1.5	2.5
GPF - Gallons Per Flush	GPM - Gallons Per Minute	

FIXTURES INSTALLED IN MAXWELL DWORKIN



SLOAN UPPERCUT®
Dual-Flush Flushometer

Water Closet: Maxwell Dworkin
Photo: Jessica Eisenman Parks, OFS 2010

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ENERGY EFFICIENCY

The School of Engineering and Applied Sciences 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

Commissioning: The mechanical and electrical systems were fully commissioned by R.G. Vanderweil Engineers LLP, a third-party Commissioning Authority, ensuring that all energy-related systems were installed as designed, and operating efficiently prior to occupancy.

Plug Loads: Energy Star equipment was selected when possible, accounting for **78%** of the total rated power.

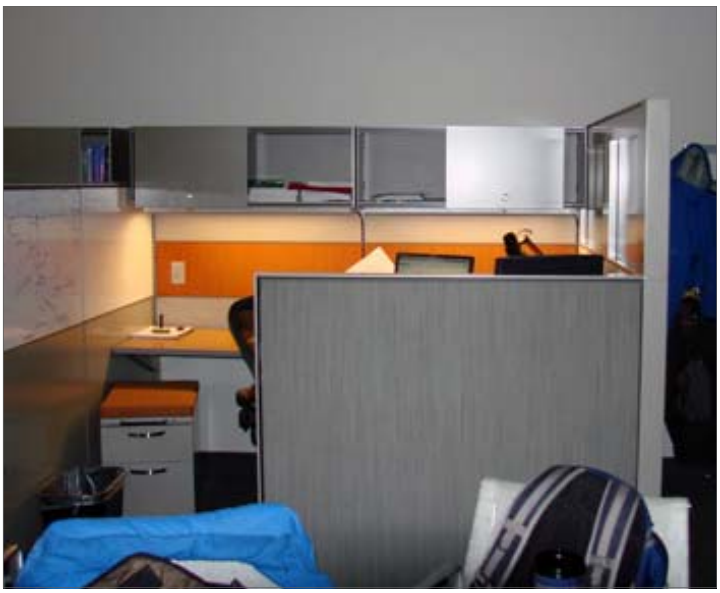
Equipment that contributed the most to this high percentage:

- 19 of 20 Desktop Computers are Energy Star
- All Laptop Computers are Energy Star
- All Computer Displays are Energy Star

Occupancy Sensors are installed in all spaces within the project scope. These sensors set the ventilation and temperature back when they have not been activated by motion for set periods of time.

Temperature Settings
SEAS IT Office

	Occupied	Unoccupied
Winter	68	63
Summer	75	80



Task Lighting in Room 211 Cubicle
Photo: Jessica Eisenman Parks. OFS 2010

Room G107 & G107A
Photo: Jessica Eisenman Parks. OFS 2010

ELECTRICAL SYSTEMS

Light Fixtures: Energy-efficient lighting fixtures and lamps were carefully chosen and placed to reduce electricity consumption. The lighting design achieves a lighting power density (LPD) of 0.9 watts per sq. ft., which is significantly lower than the code standard of 1.1 W/sf. As a result, the project has achieved a **15.63%** reduction in installed LDP, below the code standard.

Occupancy Sensors are installed in all spaces within the project scope. These sensors turn the lights in a space off when they have not been activated by motion for set periods of time.

Individual Lighting Control: Each cubicle includes task lighting as well as a switch that controls the compact fluorescent down light directly overhead, which allows all space occupants the ability to adjust lighting to meet individual needs and preferences. This controllability also reduces the need for high ambient light levels throughout the spaces.

Daylight: Even though the spaces are broken up by private offices and cubicles, the architects looked at ways to bring daylight into the core areas. This was either accomplished directly via exterior window, or indirectly through interior glass walls and partitions.

INDOOR ENVIRONMENTAL QUALITY

SEAS 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.

Only Materials with **Low or No VOC Content** were used in the SEAS IT project. Volatile Organic Compounds (VOCs) are chemical compounds and known carcinogens found in many construction materials that are considered detrimental to indoor air quality. Reducing the use of VOCs whenever possible improves indoor air quality and consequently occupant health and productivity.

- **Composite Wood and Laminate Adhesives** used in the renovation do not have any added Urea Formaldehyde
- **Carpet System:** Tweed Pattern 5A111; Shaw Contact Group *(Carpet & Rug Institute's Green Label Plus)*
  APAC 440 Supreme adhesive; Multipurpose Adhesive Company *(SCAQMD #1168)*
- **Adhesives and Sealants and Paints and Coatings** see below for examples of the products used.

Category	Product & Manufacturer	VOC Content (g/l)	VOC Limit (g/l)	Standard
Paints & Coatings	Eco spec interior latex eggshell enamel 223 Benjamin Moore	1	150	GS-11
	Eco spec interior latex primer sealer 231 Benjamin Moore	0	200	SCAQMD #1113
	Eco spec interior latex semi gloss 224 Benjamin Moore	11	150	GS-11
Adhesives & Sealants	APAC 440 Supreme Multipurpose Adhesive All Purpose Adhesive Company	50	17	SCAQMD #1168
	Wilsonart 20, Wilsonart	80	<20	SCAQMD #1168

Looking south into Room G109
Photo: Doug Okun and Associates. 2009

Indoor Air Quality During Construction: **The** Maxwell Dworkin building maintained occupancy throughout construction. A comprehensive indoor air quality management plan was implemented during construction to maintain healthy indoor air quality for workers and future occupants..

Pre-Occupancy Flush-out The project included a 9-day flush-out once all construction was complete and furniture installed. The building HVAC system was used to evacuate any remaining contaminants from the renovation/ construction process, which is beneficial to occupant health and comfort.

Thermal Comfort Survey: To ensure thermal comfort, occupants will be surveyed at least once per season for the first year of the space's operation. Building management will adjust the heating or cooling in the project space as necessary.

IAQ Measures During Construction

Photos: Jesse Foote. OFS 2009

HVAC Protection
Ductwork was sealed during installation

Housekeeping
Sweeping agents control dust

Pathway Interruption
Exhaust filtered & directed outside

MATERIALS & WASTE

Selecting environmentally preferable materials and minimizing the amount of construction waste sent to landfill was important to the project. When selecting materials, preference was given to regionally manufactured materials.

84% of the construction and demolition waste was diverted from landfills.

56% of the total material value consists of products manufactured locally.

28% of the total material used in the project, by cost, consists of materials with recycled content.

Acoustical Ceiling Tile (Armstrong)
Recycled Content: **3%** post-consumer; **67%** pre-consumer
Distance to Manufacturer: **307 Miles** - Quebec, Canada

Gypsum Wall Board (USG)
Recycled Content: **35%** post-consumer; **5%** pre-consumer
Distance to Manufacturer: **307 Miles** - Quebec, Canada

Aluminum Horizontal Mini-Blinds (Bali)
Recycled Content: **28%** pre-consumer
Distance to Manufacturer: **365 Miles** - Montgomery, PA

My Studio Environments Systems Furniture (Herman Miller)
Recycled Content: **13%** post-consumer; **17%** pre-consumer

G107
Photo: Doug Okun and Associates, 2009

ADDITIONAL RESOURCES

- SEAS Computing and Information Technology Office (IT): http://www.seas.harvard.edu/administration/computing-it
- Sustainability Efforts at SEAS: https://intranet.seas.harvard.edu/audience/sustainability
- Harvard OFS - Green Building Services: http://green.harvard.edu/green-building-services
- Harvard OFS - Green Building Resource: http://green.harvard.edu/theresource