HARVARD
Faculty of Arts and Sciences

GREEN
is the new Crimson

NORTHWEST LABS MCB RENOVATIONS

52 Oxford Street, Cambridge, MA 02138

LEED-CI V2.0 GOLD
2010

The Northwest Labs Molecular and Cellular Biology (MCB) renovations involved the fit-out of 22,500 square feet of lab and office space. The intent of the project was to accommodate eight Principal Investigators (PIs) displaced during the selective demolition of the Sherman Fairchild building as part of the Stem Cell and Regenerative Biology (SCRB) program. Renovations occurred on five levels of the Northwest Labs building at 52 Oxford Street in Cambridge, MA. The scope of work included fitout of office and support spaces. By floor, the project scope is summarized as follows:

Northwest Labs MCB Photo: Harvard Faculty of Arts and Sciences, 2010

- **Level 3 South** – Fitout of shell space for Professors David Jeruzalmi, Rachelle Gaudet, Andres Leschziner, and Victoria D'Souza. Minor modifications to the meeting space are included for additional computer space.
- **Level 2 North** – Fitout of shell space and modifications to existing lab and office space for Stem Cell and Regenerative Biology (SCRB) Professors Doug Melton and Kevin Eggan. A compressor room in the corridor is included as part of this scope.
- **Level 1 North** – Fitout of shell space for Professors Nancy Kleckner and Guido Guidotti.
- **Level B2 South** – Renovation of existing mailroom/shipping and receiving for an x-ray crystallography suite.
- **Level B4 South** – Fitout of shell space for a 700 MHz NMR to be relocated from the Naito building.

PROJECT HIGHLIGHTS

LEED® Facts

Northwest Labs MCB
Harvard Faculty of Arts and Sciences
2010

Location	Cambridge, MA
Rating System	Commercial Interiors v2.0
Certification Achieved	Gold
Total Points Achieved	33/57
Sustainable Sites	7/7
Water Efficiency	2/2
Energy and Atmosphere	3/14
Materials and Resources	4/14
Indoor Environmental Quality	12/17
Innovation and Design	5/5

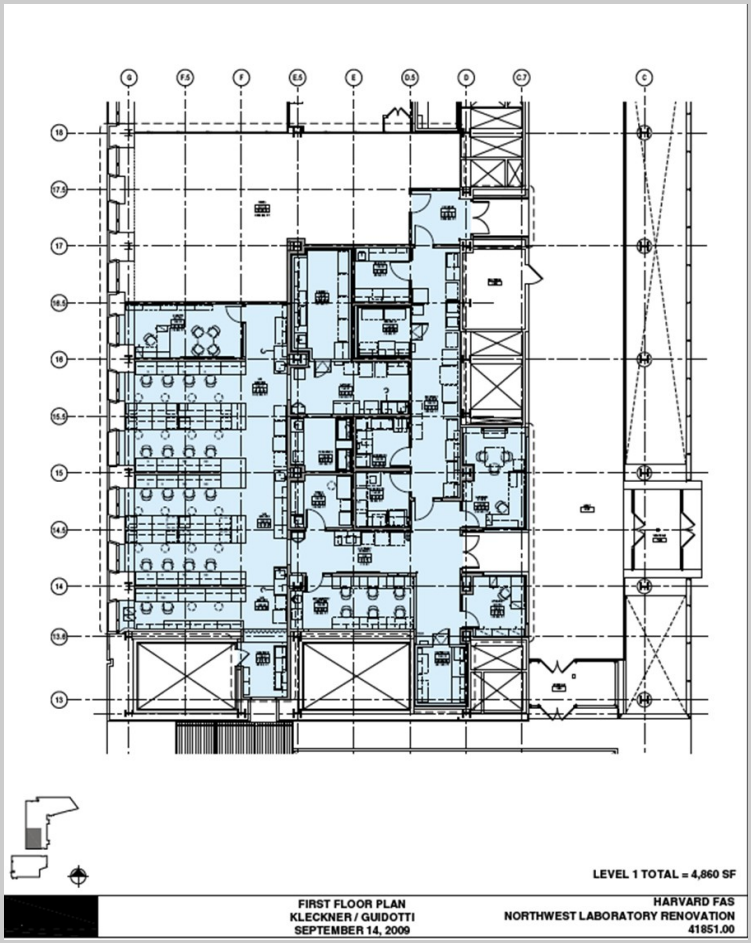
30% reduction in potable water consumption

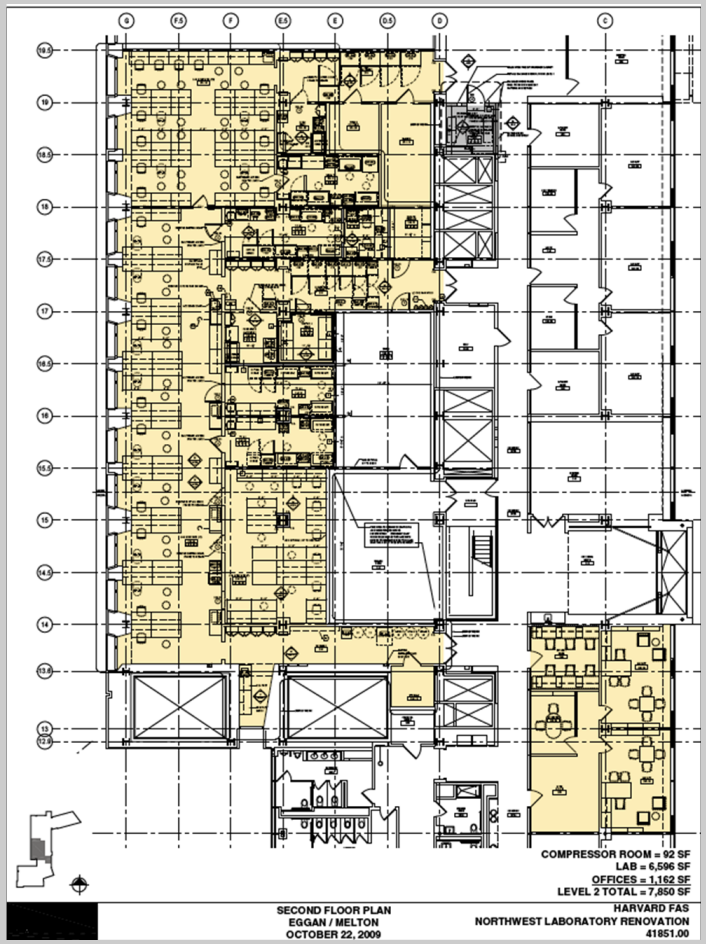
76% of regularly occupied spaces receive ample daylighting.

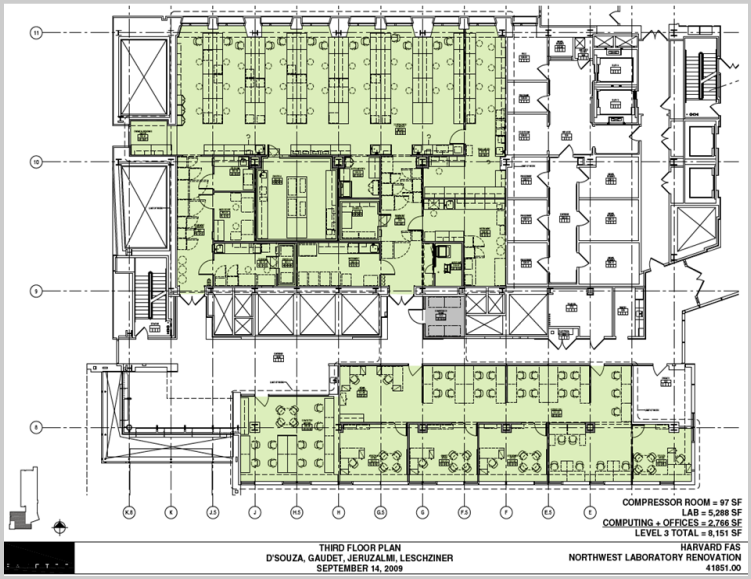
37% of construction materials were manufactured within 500 miles of the project location

PROJECT OVERVIEW

NORTHWEST LABS MCB FLOOR PLANS





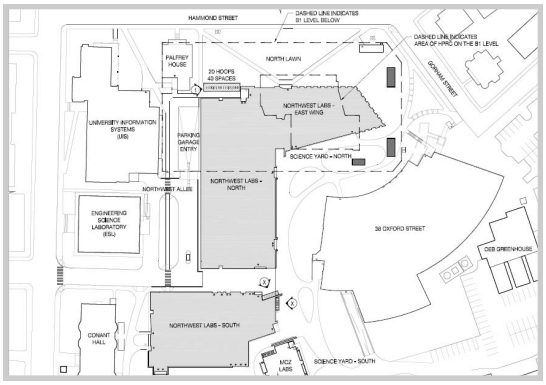


Northwest Labs MCB: Floors 1, 2 and 3
Architectural Drawings by Payette, September, 2009

PROJECT TEAM

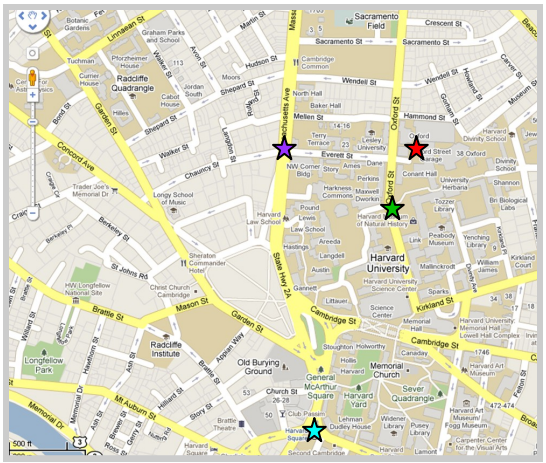
Owner	Harvard Faculty of Arts and Sciences
Project Manager	Harvard Faculty of Arts and Sciences
Architect	Payette
Contractor	Richard White Sons
HVAC Engineer	Bard, Rao + Athanas
Commissioning Authority	Energy Management Associates
Sustainability Consultant	Harvard Green Building Services

SITE



Northwest Labs Building
52 Oxford Street, Cambridge, MA

- To encourage alternatives to driving, all occupants of the Northwest Labs building have access to Harvard's ***CommuterChoice Program***, which provides incentives and discounts for all modes of alternative transportation as well as carpooling and fuel efficient vehicles.
- The Northwest Labs building is located within walking distance to the Harvard Square MBTA stop, several bus lines, and the Harvard University Shuttle.
- Inverted U Rack bicycle stands are located at several entrance points surrounding the Northwest Labs building.
- The building is located in a dense urban area, which allows occupants to walk and easily access amenities such as restaurants, banks, churches, and retail stores.



- Northwest Labs Building
- MBTA Bus Stops
- Harvard University Shuttle Bus Stops
- MBTA Subway Station

Bike Racks at Northwest Labs Building
Photo: Harvard Green Building Services

WATER EFFICIENCY

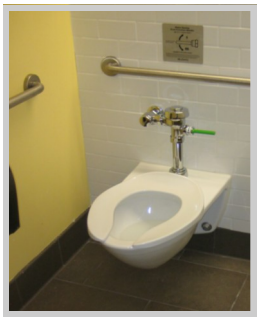
Low flow fixtures were specified in order to achieve a **30%** reduction of potable water consumption below EPAct 1992 standard flush and flow rates. Dual flush toilets and low flush kitchen and bath faucets will decrease occupant water use by limiting the rate at which water is discharged from fixtures.

Differences in the Flush & Flow Rates for EPAct 1992 Standard Fixtures and the fixtures installed for the Northwest Labs MCB Project

Fixture Type	Northwest Labs MCB Flush & Flow Rates	EPAct 1992 Standard Flush & Flow Rates
Water Closet [GPF]	1.35	1.6
Urinal [GPF]	1.0	1.0
Bathroom Sink [GPM]	0.5	2.2
Shower [GPM]	2.5	2.5
Kitchen Sink [GPM]	1.6	2.2
GPF - Gallons Per Flush	GPM - Gallons Per Minute	

FIXTURES IN NORTHWEST LABS MCB PROJECT

Chicago Faucets®
Deck Mounted Kitchen Faucet
1.6 gpm



SLOAN UPPERCUT®
Dual-Flush Flushometer
Up 1.1 gpf, Down 1.6 gpf)

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

HARVARD RECYCLES

ENERGY EFFICIENCY

Harvard Faculty of Arts and 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

Efficient HVAC systems were designed in order to reduce unnecessary energy and resource consumption.

HVAC Setbacks: During periods when researchers are not present, ventilation airflow is reduced by 2/3, from 6 air changes per hour down to 2.

Demand Control Ventilation: In certain project areas, when CO_2 levels permit, ventilation will be reduced to save energy.

Energy Efficient Fume Hoods: All constant air volume (CAV) fume hoods are low airflow, high-containment class A type chemical fume foods set for 70 feet per minute (FPM) face velocity.

ELECTRICAL SYSTEMS

Efficient lighting systems were designed in order to reduce unnecessary energy consumption.

Advanced Lighting Controls: Lutron's EcoSystem was utilized for full control of open laboratory and open office spaces.

Daylight Harvesting: Pendant fixtures within 15 feet of exterior perimeter windows will dim in response to the presence daylight illumination.

Occupancy Sensors: Occupancy sensors are strategically placed throughout the project that are activated by sound and motion. When activated, lighting is switched on only in the zones controlled by the particular sensor. Occupancy sensors were strategically located to minimize lamp run-times based on occupant behavior.

FAS GREEN LABS

The FAS Green Labs Program works with researchers, staff, faculty, and building managers to implement sustainable practices and technologies in the FAS lab buildings. Because of the resource intensity of lab science and the unique conditions and requirements in each individual lab, lab sustainability approaches must be made from both a building-wide perspective, as well as a granular perspective aimed at identifying local opportunities at the lab level. FAS Green Labs Program initiatives, with the support of paid lab sustainability representatives, help mitigate resource intensity, while respecting the resource demands of science.

Lab Sustainability Assessments:

The Lab Sustainability Assessment program, a component of FAS Green Labs, operates under the conviction that scientific research can be conducted in more environmentally sustainable ways without adversely impacting research quality. By involving researchers in the process of assessing potential sustainability opportunities, the program aims to share best practices regarding lab energy efficiency, lab water efficiency, lab material recycling, lab material procurement, and toxic waste reduction/prevention.

Key Energy Conservation Measures (ECMs):

- Installing occupancy sensors on lights
- Setting back building temperatures and ventilation rates slightly at night
- Replacing inefficient lighting
- Converting constant volume fume hoods into variable volume fume hoods

INDOOR ENVIRONMENTAL QUALITY

Harvard's Faculty of Arts and Sciences 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.

Indoor Air Quality During Construction: The building maintained occupancy throughout construction. Thus, a comprehensive indoor air quality management plan was implemented during construction to maintain healthy indoor air quality. For example, all grills and vents were sealed and a HEPA Filtration unit maintained negative pressure to keep any construction debris from migrating into occupied spaces. A flush-out of the space was done prior to construction to remove any potential contaminants.

Only materials with **Low or No VOC Content** were used in the Northwest Labs MCB 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** Shaw EcoWorx broadloom carpet product is CRI Green Label Plus certified.

Product Category	Product & Manufacturer	VOC Content (g/l)	VOC Limit (g/l)	Standard
Paints & Coatings	DEX-O-TEX Décor Epoxy Flooring	7	100	SCAQMD Rule #1168
	PPG Pure Performance Primer	0	100	SCAQMD Rule #1168
	PPG Pure Performance Eggshell Finish	0	150	GS-11
Adhesives & Sealants	STI LCI Fireproofing Sealant	35	420	SCAQMD Rule #1168
	AAT 280 Carpet Adhesive	0	50	SCAQMD Rule #1168

Construction IAQ Measures Implemented During Construction

Porous materials were stored raised up off the floor on dunnage.

Supply and return diffusers were covered with MERV 8 filtration media.

Ductwork Protection
Ductwork was delivered to the site with ends covered in polyethylene to block any dust from migrating into the ventilation systems.

Daylight and Views: The laboratory architecture and fenestration provides a connection between indoor and outdoor environment by introducing daylight and views to 76% of the regularly occupied spaces.

Health and Wellness: Studies have linked access to views of nature in the workplace to the relief of boredom, anxiety, and stress[1].

[1] Ulrich, R. S. Effects of interior design on wellness: theory and recent scientific research. (Journal of Healthcare Design, Vol 3, pp. 97-109, 1992)

MATERIALS & WASTE

Selecting environmentally preferable materials and minimizing the amount of construction waste sent to landfill was important to the project. For the additional materials purchased, the project gave preference to low-emitting materials with recycled content and local manufacturing.

37% **of the total material value consists of products manufactured within 500 miles of the project site.**

80% **of the on-site generated construction waste was diverted from the landfill.**

16% **of the total value of materials used in the project consist of materials with recycled content.**

NWL MCB Office
Photo: Harvard Faculty of Arts and Sciences, 2010

ENVIRONMENTALLY PREFERABLE MATERIALS IN NORTHWEST LABS MCB

- Gypsum Board Drywall (USG)
  94% pre-consumer, **5%** post-consumer
- Acoustical Ceiling Tile (Armstrong)
  65% pre-consumer, **15%** post-consumer
- Melamine Flakeboard (Panolam Zcore)
  100% pre-consumer, **0%** post-consumer
- Stainless Steel Lab Casework (Bedcolab)
  81% pre-consumer, **19%** post-consumer

Examples of regional materials used in project:

Material Name	Manufacturer	Distance between project & Manufacturer (mi)
Epoxy Flooring	Décor Floor Company	233
Melamine Flakeboard	Panolam Zcore	60
Rolled Rubber Flooring	Nora	50

NWL MCB Open Lab
Photo: Harvard Faculty of Arts and Sciences, 2010

ADDITIONAL RESOURCES

- Harvard FAS, Department of Molecular and Cellular Biology: http://mcb.harvard.edu
- Harvard FAS, Green Labs Program: http://green.harvard.edu/fas/green-labs
- Harvard Green Building Services: http://green.harvard.edu/green-building-services
- Harvard Green Building Resource: http://green.harvard.edu/theresource
- Follow Harvard Green Building Services: Twitter | Facebook