HARVARD
Faculty of Arts and Sciences

GREEN
is the new Crimson

Museum of Comparative Zoology
Northwest Labs, 26 Oxford Street, Cambridge, MA
Project Profile

LEED for Commercial Interiors v.2009
LEED Platinum
2013

The Northwest Science building, owned by the Harvard Faculty of Arts and Sciences (FAS), located at 52 Oxford Street contains approximately 502,000 gross square feet and consists of interdisciplinary research clusters in fields such as neurosciences, systems, molecular, and cellular biology, and computational analysis. This project only encompasses a small portion of the overall building (approximately 50,000 square feet). The purpose of the project is to relocate 80,000 mammal specimens to a state-of-the-art laboratory facility with better instruments and climate control. The principal investigators (PIs) will leverage the new facilities to enhance their research, and the specimens will be better preserved in a more stable environment.

Photo: copyright Harvard Green Building Services, 2013

This is the ninth LEED certification for the Northwest Science building. Previous to this project, the Northwest Science building had achieved three platinum certifications under the LEED for Commercial Interiors v2009 rating system, which is the highest certification level achievable. The certification of this project makes four LEED platinum certifications in all. In addition, the Northwest Science building has achieved five gold certifications under the LEED for Commercial Interiors v2009 rating system with more certifications to come.

LEED® Facts

Museum of Comparative Zoology

Harvard Faculty of Arts and Science

Location	Cambridge, MA
Rating System	LEED-CI v2009
Certification Achieved	Platinum
Total Points Submitted	86/110
Sustainable Sites	20/21
Water Efficiency	6/11
Energy and Atmosphere	32/37
Materials and Resources	6/14
Indoor Environmental Quality	12/17
Innovation and Design	6/6
Regional Priority	4/4

Project Metrics

31% lighting power reduction below ASHRAE standards

32% reduction in water use below baseline standard (EPACT 1992 baseline)

82% construction waste diverted from landfill via recycling and reuse

36% regional materials (manufactured within 500 miles) value as a percentage of total materials value

13% recycled content (post-consumer plus 1/2 pre-consumer content) value as a percentage of total materials value

ENERGY EFFICIENCY

The Harvard Faculty of Arts and Sciences (FAS) 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 Museum of Comparative Zoology Project.

MECHANICAL SYSTEMS

ECM 1: Direct Digital Controls (DDC) - Space temperature is monitored and controlled through local controllers integrated with DDC logic. Office supply air control will be controlled through the DDC with conventional VAV terminal boxes.

ECM 2: Variable Air Volume Control - VAV terminals control the amount of air delivered to that room as opposed to CV terminals that only allow air to be delivered at a constant rate. Through the integration of DDCs, building occupants can control the amount of air flow and, in turn, provide an optimal level of thermal comfort. In addition, VAV terminals use less energy than CV terminals due to their ability to lower the amount of air being delivered.

ECM 3: Laboratory Pressurization Control System (LPCS) - Laboratory supply and exhaust air are controlled through an integrated LPCS. The LPCS will consist of variable volume supply and general exhaust schemes, as well as variable volume control of fume hoods and special exhaust systems.

ECM 4: Building Automation System (BAS) - The Building Automation System (BAS) is an extension of the base building control network.

ECM 5: Occupancy Sensors - Occupancy sensors are installed in all spaces (except environmental rooms) to set back the temperature to predetermined un-occupied set-points. The sensors also reduce ventilation rates and turn off the fan coil unit fans in un-occupied mode. This provides energy savings.

Vertebrate Paleontology Photo: Harvard Green Building Services, 2013

Mammalogy Collection Photo: Harvard Green Building Services, 2013

ELECTRICAL SYSTEMS

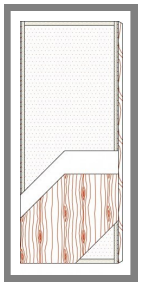
ECM 1: Occupancy Sensors - Occupancy sensors are installed in all spaces (except environmental rooms) to turn the lights on, or off, based on actual occupancy. In addition to wall mounted infrared occupancy sensors, dual technology ceiling sensors were installed. These occupancy sensors combine the benefits of passive infrared (PIR) and ultrasonic technologies to detect occupancy. In total, occupancy sensors control 94% of the lighting load.

ECM 2: Reduction in Lighting Power Density - 32% reduction in Lighting Power Density (watts/square foot) when compared to ASHRAE 90.1-2007 baseline. Reduction was achieved through the use of LEDs, high efficiency linear fluorescent lamps and efficient fixtures.

PRODUCTS AND MATERIALS

Highlights

- **13% Recycled Content** value as a percentage of total materials cost.
- **36% Regionally Manufactured** value as a percentage of total materials cost.
- **25% Regionally Extracted** value as a percentage of total materials cost.
- **Only Low-VOC, or No-VOC** adhesives, sealants, paints and coatings were used.

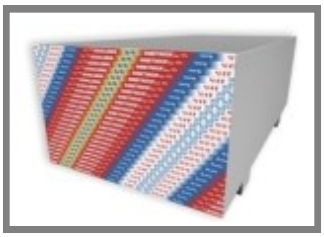


Laminated Strand Lumber Core
Lambton

- ✓ Recycled Content
  - 100% Pre-consumer
- ✓ Regionally Manufactured
  - Lambton, QC, Canda– 247 miles
- ✓ Regionally Manufactured
- ✓ FSC certified wood
- ✓ No urea formaldehyde

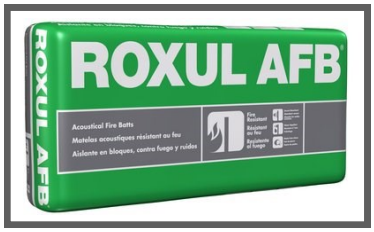
L-Series Mortise Lock
I.R. Security Products

- ✓ Recycled Content
  - 23.3% Post-consumer
  - 29.9% Pre-consumer



Sheetrock Type X
USG

- ✓ Recycled Content
  - 4% Post-consumer
  - 94% Pre-consumer
- ✓ Regionally Manufactured
  - Baltimore, MD - 359 miles
- ✓ Regionally Extracted

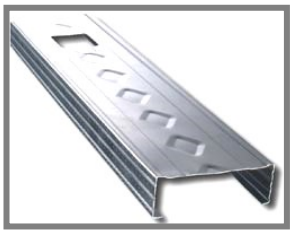


Acoustical Fire Batt
Roxul

- ✓ Recycled Content
  - 75% Pre-consumer
- ✓ Regionally Manufactured
  - Milton, Ontario, Canada - 450 miles
- ✓ Regionally Extracted
- ✓ GREENGUARD® Certified

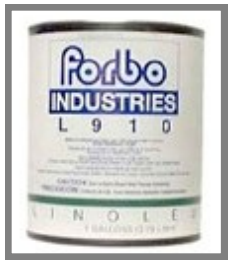
Commercial Sheet Flooring
Altro

- ✓ Recycled Content
  - 25% Pre-consumer
- ✓ FloorScore
- ✓ No PVC



Light Gauge Metal Framing
ClarkDietrich

- ✓ Recycled Content
  - 25.9% Post-consumer
  - 5.9% Pre-consumer
- ✓ Regionally Manufactured
  - Bristol, CT - 107 miles
- ✓ Regionally Manufactured
  - Fairless Hills, PA - 247 miles



L-910 Linoleum Adhesive
Forbo

- ✓ VOC Content = 0 g/L
  vs. 60 g/L VOC Limit

Proform Multi-Use
National Gypsum

- ✓ VOC Content = 2 g/L
  vs. 250 g/L VOC Limit

ProIndustrial Acrylic S/G
Sherwin Williams

- ✓ VOC Content = 0 g/L
  vs. 150 g/L VOC Limit

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PRODUCTS AND MATERIALS

LIGHTING AND CONTROLS

- **31% Reduction** in lighting power density (watts/square foot)

Semi-Direct Extruded Aluminum Fixture
Model #SDx
LiteControl

- ✓ Total fixture wattage = 62 Watts
- ✓ Flared upper reflectors provide openings and reflective surfaces for indirect distribution.
- ✓ MBDC Cradle to Cradle Certified Silver

Passive Infrared Dual Relay Wall Switch Sensor
Model #PW-200
WattStopper

- ✓ Defaults to Auto-ON to 50% operation for maximum energy savings
- ✓ Selectable operation, walk-through, test and presentation modes for increased energy savings and convenience

Digital Dual Technology Ceiling Mount Occupancy Sensor
Model #LMDC-100
WattStopper

- ✓ IR transceiver for wireless configuration and remote control
- ✓ Digital sensor with LCD display and programming pushbuttons behind snap off cover

WATER EFFICIENCY

32% Reduction in annual water use (6,840 gallons/year) when compared to EPAct 1992 baseline standard

Uppercut Dual Flush Flushometer
Model #WES-111
Sloan

- ✓ **1.1/1.6 gallons per flush** (gpf) vs. EPAct baseline of 1.6 gpf.

Manual HEU Flushometer/Urinal
Model #WEUS-1000.1001-0.13
Sloan

- ✓ **0.13 gallons per flush** (gpf) vs. EPAct baseline of 0.5 gpf.

Euro-Flo™ Hand Shower,
Model #H421-V
Symmons

- ✓ **2.0 gallons per minute** (gpm) vs. EPAct baseline of 2.5 gpm.

PROJECT TEAM

Owner	Harvard Faculty of Arts and Sciences, Museum of Comparative Zoology
Project Manager	Harvard Faculty of Arts and Sciences, Physical Resources & Planning
Architect	Burt Hill / Stantec
MEP Engineer	Bard Rao + Athanas Consulting Engineers
Lighting Consultant	Sladen Feinstein INT
Contractor	DC Beane and Associates
Commissioning Authority	Energy Management Associates, Inc.
Sustainability Consultant	Harvard Green Building Services

MORE INFORMATION

➢Harvard Green Labs Program:
http://green.harvard.edu/programs/green-labs

➢Harvard Faculty of Arts and Sciences:
www.fas.harvard.edu/home/

➢ Harvard - Green Building Services:
http://green.harvard.edu/tools-resources/video/green-building-services-harvard-university

➢Harvard - Green Building Resource:
http://www.energyandfacilities.harvard.edu/green-building-resource

➢Follow Green Building Services:
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