HARVARD
Faculty of Arts and Sciences

HARVARD UNIVERSITY | Sustainability

Eddy Rivas Laboratory
16 Divinity Ave, Cambridge, MA
Project Profile

LEED CI v3.0
LEED Gold
December 2016

The FAS Eddy Rivas Laboratory Renovation project scope includes renovations within the 1st floor of the Bio Labs Building. The scope covers select demolition and construction of new partitions, ceilings, and general finish upgrades as part of the total renovation of existing office, conference and laboratory spaces. Work also includes new lighting throughout and mechanical system upgrades and additions to support the new laboratory spaces. The renovation will encompass approximately 4,115 square feet. The project's goals were to create high performance lab spaces that optimize energy and the indoor environment, reduce resource consumption, and increase occupant engagement. The project team was committed to sustainability from the onset and followed the Harvard Green Building Standards to make more informed decisions. These standards led to the inclusion of a number of progressive design strategies to meet aggressive energy targets and reduce water use without significant additional cost. The project achieved LEED-CI v3 Gold certification in December 2016.

LEED® Facts

Harvard University
Eddy Rivas Laboratory

Location	Cambridge, MA
Rating System	LEED-CI v3
Certification Achieved	Gold
Total Points Achieved	79/110
Sustainable Sites	18/21
Water Efficiency	11/11
Energy and Atmosphere	23/37
Materials and Resources	5/14
Indoor Environmental Quality	12/17
Innovation and Design	6/6
Regional Priority	4/4

Project Metrics

43% reduction in water use below code maximum

100% of the eligible equipment and appliances by rated power are ENERGY STAR certified

100% of individual and shared multi-occupant spaces have lighting controls

28% reduction in lighting power density

100% of the HVAC&R equipment does not utilize CFC-based refrigerants

100% of the project's adhesives, sealants, paints, coatings, flooring systems, composite wood and furniture are low-emitting

MECHANICAL SYSTEMS AND INDOOR ENVIRONMENTAL QUALITY

MECHANICAL SYSTEMS

ECM 1: High Efficiency Fans and Motors

ECM 2: Occupancy Sensors

ECM 3: High Efficiency Fan Coil Unit

ECM 4: Variable Air Volume Control (VAV)

ECM 5: Temperature Sensors

ECM 6: Chilled Beam Conditioning

The overall strategy of the HVAC system design was to reduce energy use through the installation of high efficiency equipment and controls. The design includes a VAV box, which controls the fresh air entering the space from the existing rooftop air handling unit. A FCU, which is served by the VAV box, reconditions the air and distributes the fresh air to the chilled beams, providing the cooling for the space while radiant hot water panels provide the necessary heating.

Additionally, each individual space or shared-office has its own zone and the occupants are able to control the temperature via a wall mounted thermostat.

INDOOR ENVIRONMENTAL QUALITY

The high indoor environmental quality of the Eddy Rivas Laboratory renovation was a significant focus of the project. An indoor Quality Management Plan was enacted to ensure the protection of building systems, building occupants, construction related occupants, and interior building materials from air pollutants, excessive moisture exposure, and moisture damage during construction.

The selection of low chemical-emitting construction and finish materials was an important driving force in the design phase. The project includes low VOC adhesives, sealants, paints, coatings, primers, and flooring systems. All wood and agrifiber products are also free of urea-formaldehyde.

LIGHTING AND ELECTRICAL SYSTEMS

The Eddy Rivas Laboratory space is expected to be occupied for extended periods through-out the year, therefore, it is crucial that the energy reduction strategies also focus on reducing lighting energy. The lighting system was designed to not only reduce energy use, but also to improve in the indoor environmental quality of the space and provide optimal lighting. Some of the strategies employed include:

- Reduce lighting power density by 28% below the ASHRAE 90.1 baseline standard
- High performance LEDs installed throughout the project space
- Ceiling mounted occupancy sensors capable of managing lighting setbacks for lab, work spaces, and support rooms.
- Lighting controls with multiple lighting levels.

PLUMBING SYSTEMS AND POTABLE WATER USE REDUCTION

Decreasing the demand for potable water is the first step towards sustainable water management. Therefore, the plumbing system for the Eddy Rivas Laboratory was designed to reduce resource consumption, specifically potable water use. Potable water use was reduced by incorporating a low-flow fixture in the project space. In the Cafe, a 1.5 gpm kitchen sink was installed, reducing water use in the space by over 43% when compared to the baseline plumbing fixtures required by code.

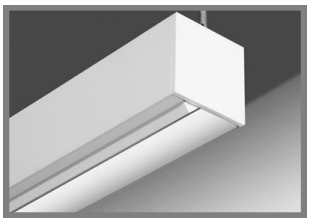
Since there are no flush fixtures installed as part of the project scope and there are no flush fixtures located within the tenant space, tenants must utilize bathrooms in close proximity to the Eddy Rivas Laboratory. The bathroom which is used by the project tenants has installed a water closet with a GPF of 1.28, a urinal with an installed GPF of 0, and a lavatory faucet metered at 0.1 GPC. With the addition of these calculations, the overall percent reduction of water use in all fixtures is just over 43%.

PRODUCTS AND MATERIALS

LIGHTING AND CONTROLS

- **28% reduction** in lighting power density (watts/square foot)

Edge LED Recessed Linear
Pinnacle
- ✓ Total fixture wattage = 25 watts
- ✓ LED fixture with dimming capability



LED Wall Wash
Finelite
- ✓ Total fixture wattage = 20 Watts
- ✓ LED Fixture
- ✓ High performance luminaire that delivers excellent visual comfort and uniform illumination

Multi-Technology Ceiling Occupancy Sensor
Leviton
- ✓ Saves energy by keeping the lights OFF while the room is unoccupied.

ENERGY EFFICIENT APPLIANCES & WATER EFFICIENCY

- **100%** of the equipment purchased for the project is **ENERGY STAR RATED** (by rated power).
- **43% reduction** in annual water use when compared to EPAct 1992 baseline standard.

Slim Direct-Lit LED Display
Model #DM40E - DM-E
Samsung
- ✓ ENERGY STAR®
- ✓ Innovative cooling technology, even during 24/7 continuous operation

Bottom Freezer Refrigerator
Model #FFBF245SSX
Summit
- ✓ ENERGY STAR®
- ✓ Saves energy waste by putting the freezer under the refrigerator to keep commonly used contents at eye level

Manual Faucet
Model #50-L9-317XKABCP
Chicago
- ✓ **1.5 gallons per minute (gpm) aerator** vs. EPAct baseline of 2.2 gpm.

LOW-EMITTING MATERIALS

- **100%** of the project's adhesives, sealants, paints, coatings, and flooring systems are **low-emitting.**

Vinyl Flooring
Model # Linen Cherry Cork
Wicanders
- ✓ FloorScore Certified

Sheet & Tile Adhesive
Model #Sustain 885 M
Forbo
- ✓ No VOCs
- ✓ Non-toxic, solvent-free Marmoleum sheet and tile adhesive

Interior Latex Primer
Model #Ultra Spec 500
Benjamin Moore
- ✓ No VOCs

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.

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PROJECT SCORECARD

FAS Eddy Rivas Lab Renovation

Project ID	1000059294
Rating system & version	LEED-CI v2009
Project registration date	06/25/2015

Certified (Gold)

CERTIFIED: 40-49, SILVER: 50-59, GOLD: 60-79, PLATINUM: 80+

LEED FOR COMMERCIAL INTERIORS (V2009)

ATTEMPTED: 80, DENIED: 1, PENDING: 0, AWARDED: 79 OF 110 POINTS

SUSTAINABLE SITES	18 OF 21
SSc1 Site Selection	2 / 5
SSc2 Development Density and Community Connectivity	6 / 6
SSc3.1 Alternative Transportation-Public Transportation Access	6 / 6
SSc3.2 Alternative Transportation-Bicycle Storage and Changing Room	2 / 2
SSc3.3 Alternative Transportation-Parking Availability	2 / 2

WATER EFFICIENCY	11 OF 11
WEp1 Water Use Reduction-20% Reduction	Y
WEc1 Water Use Reduction	11 / 11

ENERGY AND ATMOSPHERE	23 OF 37
EAp1 Fundamental Commissioning of the Building Energy Systems	Y
EAp2 Minimum Energy Performance	Y
EAp3 Fundamental Refrigerant Mgmt	Y
EAc1.1 Optimize Energy Performance-Lighting Power	3 / 5
EAc1.2 Optimize Energy Performance-Lighting Controls	1 / 3
EAc1.3 Optimize Energy Performance-HVAC	5 / 10
EAc1.4 Optimize Energy Performance-Equipment and Appliances	4 / 4
EAc2 Enhanced Commissioning	5 / 5
EAc3 Measurement and Verification	0 / 5
EAc4 Green Power	5 / 5

MATERIALS AND RESOURCES	5 OF 14
MRp1 Storage and Collection of Recyclables	Y
MRc1.1 Tenant Space-Long-Term Commitment	1 / 1
MRc1.2 Building Reuse	0 / 2
MRc2 Construction Waste Mgmt	2 / 2
MRc3.1 Materials Reuse	0 / 2
MRc3.2 Materials Reuse-Furniture and Furnishings	0 / 1
MRc4 Recycled Content	2 / 2
MRc5 Regional Materials	0 / 2
MRc6 Rapidly Renewable Materials	0 / 1
MRc7 Certified Wood	0 / 1

INDOOR ENVIRONMENTAL QUALITY	12 OF 17
IEQp1 Minimum IAQ Performance	Y
IEQp2 Environmental Tobacco Smoke (ETS) Control	Y
IEQc1 Outdoor Air Delivery Monitoring	0 / 1
IEQc2 Increased Ventilation	1 / 1
IEQc3.1 Construction IAQ Mgmt Plan-During Construction	1 / 1
IEQc3.2 Construction IAQ Mgmt Plan-Before Occupancy	0 / 1
IEQc4.1 Low-Emitting Materials-Adhesives and Sealants	1 / 1
IEQc4.2 Low-Emitting Materials-Paints and Coatings	1 / 1
IEQc4.3 Low-Emitting Materials-Flooring Systems	1 / 1
IEQc4.4 Low-Emitting Materials-Composite Wood and Agrifiber Products	1 / 1
IEQc4.5 Low-Emitting Materials-Systems Furniture and Seating	1 / 1
IEQc5 Indoor Chemical and Pollutant Source Control	0 / 1
IEQc6.1 Controllability of Systems-Lighting	1 / 1
IEQc6.2 Controllability of Systems-Thermal Comfort	1 / 1
IEQc7.1 Thermal Comfort-Design	1 / 1
IEQc7.2 Thermal Comfort-Verification	1 / 1
IEQc8.1 Daylight and Views-Daylight	0 / 2
IEQc8.2 Daylight and Views-Views for Seated Spaces	1 / 1

INNOVATION IN DESIGN	6 OF 6
IDc1.1 Occupant Education w/ Case Study	1 / 1
IDc1.1 Innovation in Design	0 / 1
IDc1.2 Innovation in Design	0 / 1
IDc1.2 Low-Mercury Lighting	1 / 1
IDc1.3 IDc1.3 EP - Green Power	1 / 1
IDc1.3 Innovation in Design	0 / 1
IDc1.4 IDc1.4 EP - SSc3.1	1 / 1
IDc1.4 Innovation in Design	0 / 1
IDc1.5 IDc1.5 EP - EAc1.4	1 / 1
IDc1.5 Innovation in Design	0 / 1
IDc2 LEED® Accredited Professional	1 / 1

REGIONAL PRIORITY CREDITS	4 OF 4
SSc3.2 Alternative Transportation-Bicycle Storage and Changing Room	1 / 1
WEc1 Water Use Reduction	1 / 1
EAc1.1 Optimize Energy Performance-Lighting Power	1 / 1
EAc1.3 Optimize Energy Performance-HVAC	1 / 1

TOTAL	79 OF 110

MORE INFORMATION

- Harvard Faculty of Arts and Sciences: http://www.fas.harvard.edu/home/
- Eddy Rivas Lab: http://eddylab.org/
- Harvard - Green Building Resource: http://www.energyandfacilities.harvard.edu/green-building-resource
- Harvard - Green Building Services: http://www.energyandfacilities.harvard.edu/project-technical-support/capital-projects/sustainable-design-support-services