

**RIAS 40 CONCORD AVENUE RENOVATION**  
**40 CONCORD AVENUE, CAMBRIDGE, MA**  
**PROJECT PROFILE**

**LEED-CI v3**  
**LEED GOLD**  
**2017**

The 40 Concord Avenue Renovation project consisted of the full-gut renovation of 40 Concord Avenue, a small office building located in the Radcliffe Institute for Advanced Study’s Bunting Quadrangle in Cambridge, Massachusetts. The building houses staff that work for Radcliffe’s Schlesinger Library and includes mechanical space, open office space, conference rooms, restrooms, and a break room within its four floors. 40 Concord Avenue has one basement level and three levels above-grade.



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Renovations at 40 Concord Avenue included the select demolition and construction of new partitions, as well new ceilings, flooring, finishes, and furniture. The project also included a complete redesign of the building’s mechanical, electrical, and plumbing systems. The renovation encompassed approximately 5,532 square feet.

The project’s goals were to create high performance office 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, reduce water use, and select healthier building materials without significant additional cost. The project achieved LEED-CI v3 Gold certification in 2017.

**LEED® Facts**

**Harvard University**  
**40 Concord Avenue**



Location.....	Cambridge, MA
Rating System.....	LEED-CI v3
Certification Anticipated.....	Gold
Total Points Anticipated.....	61/110
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Sustainable Sites.....	18/21
Water Efficiency.....	11/11
Energy and Atmosphere.....	17/37
Materials and Resources.....	1/14
Indoor Environmental Quality.....	7/17
Innovation and Design.....	5/6
Regional Priority.....	2/4

**PROJECT METRICS**

- 45%** Reduction in lighting power density below ASHRAE 90.1-2007 baseline
- 43%** Reduction in water use below baseline
- 77%** Of the project’s connected lighting load is controlled by occupancy sensors
- 100%** Of the project’s adhesives, sealants, paints, coatings, and composite wood are low-emitting.



## PROJECT HIGHLIGHTS

The 40 Concord Avenue 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 the indoor environmental quality of the space and provide optimal lighting. Some of the strategies employed include:



Photo: copyright Green Building Services, 2017

- Reduce lighting power density by 45% below the ASHRAE 90.1 baseline standard
- High performance LEDs installed throughout the project space
- Ceiling mounted daylight and occupancy sensors capable of managing lighting setbacks for work spaces and conference rooms
- Integrated occupancy sensors on all provided task lighting
- Lighting controls with multiple lighting levels to provide adequate illumination for a higher indoor environmental quality



Photo: copyright Green Building Services, 2017

## PROJECT TEAM

<b>Owner</b>	Harvard University
<b>Project Manager</b>	Radcliffe Institute for Advanced Study
<b>Architect</b>	Austin Architects
<b>MEP Engineer</b>	Engineered Solutions, Inc.
<b>Contractor</b>	BOND
<b>Commissioning Authority</b>	Harvard Green Building Services
<b>Sustainability Consultant</b>	Harvard Green Building Services



## ENERGY EFFICIENCY AND INDOOR ENVIRONMENTAL QUALITY

### ENERGY EFFICIENCY

The overall strategy of the HVAC system design was to reduce energy use through the installation of high efficiency equipment and controls. The project includes the installation of a new 100% outside air handling unit including high-efficiency filtrations. Fan coil units with EC motors were installed throughout the space to provide the ability for room-level thermal comfort.

Space heating is provided via an ultra-efficient (95% AFUE) natural gas-fired boiler. Hot water from the boiler is also fed to a domestic hot water storage tank, where it is stored until needed at any of the building's restroom lavatories. Space cooling is provided via chilled water from Harvard's central chilled water plant.

All space temperatures and set-points are mapped to the building automation system, which uses temperature and



Photo: copyright Green Building Services, 2017



Photo: copyright Green Building Services, 2017

### INDOOR ENVIRONMENTAL QUALITY

The indoor environmental quality of the 40 Concord Avenue renovation was a significant focus of the project. An indoor Air 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.

Additionally, all systems furniture selected for the project was either Greenguard certified or BIFMA level certified and free of chemical flame retardants.



## PRODUCTS AND MATERIALS

### LIGHTING AND CONTROLS

- 45% reduction in lighting power density (watts/square foot)



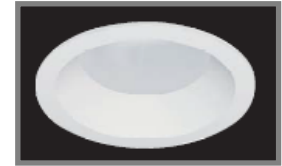
**LED Semi-Recessed Luminaire**  
Kone3

- ✓ LED Fixture
- ✓ Total fixture wattage = 31 watts
- ✓ Delivered lumens = 3,000 lumens
- ✓ Life: 50,000 hours



**LED Pendant Luminaire**  
Kone3

- ✓ LED Fixture
- ✓ Total fixture wattage = 31 Watts
- ✓ Delivered lumens = 3,000 lumens
- ✓ Life: 50,000 hours



**LED Recessed Downlight**  
BeveLED

- ✓ LED fixture
- ✓ Total fixture wattage = 16 Watts
- ✓ Delivered lumens = 1,100 lumens
- ✓ Life: 50,000 hours

### LOW-EMITTING MATERIALS

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



**Architectural Sealant**  
SpecSeries LCI Intumescent Sealant  
STI

- ✓ Low VOCs



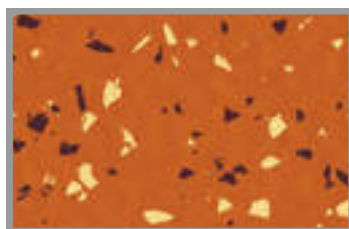
**Acoustical Sealant**  
Sheetrock Brand Acoustical Sealant  
USG

- ✓ Low VOCs



**Rubber Flooring**  
Noraplan Environcare  
Nora

- ✓ Meets CA Section 01350 testing and product requirements



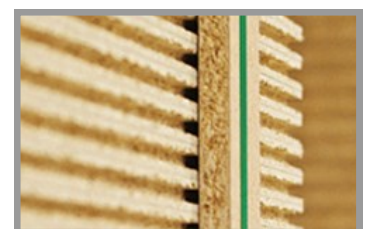
**Rubber Flooring**  
Norament Grano  
Nora

- ✓ Meets CA Section 01350 testing and product requirements



**Rubber Floor Adhesive**  
485 Adhesive  
Nora

- ✓ No VOCs



**Particleboard**  
Nu Green 2  
Uniboard

- ✓ Contains no added urea-formaldehyde

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.



# PROJECT SCORECARD

## 40 Concord Ave Renovation - Radcliffe

Project ID: 1000076268  
 Rating system & version: LEED-CI v2009  
 Project registration date: 08/31/2016



### Construction Application Decision

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

## LEED 2009 COMMERCIAL INTERIORS

ATTEMPTED: 59, DENIED: 0, PENDING: 0, AWARDED: 61 OF 108 POINTS

SUSTAINABLE SITES		18 OF 21
SSc1	Site Selection	4 / 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	0 / 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		17 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	5 / 5
EAc1.2	Optimize Energy Performance-Lighting Controls	3 / 3
EAc1.3	Optimize Energy Performance-HVAC	0 / 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	0 / 5

MATERIALS AND RESOURCES		1 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	0 / 2
MRC3.1	Materials Reuse	0 / 2
MRC3.2	Materials Reuse-Furniture and Furnishings	0 / 1
MRC4	Recycled Content	0 / 2
MRC5	Regional Materials	0 / 2
MRC6	Rapidly Renewable Materials	0 / 1
MRC7	Certified Wood	0 / 1

INDOOR ENVIRONMENTAL QUALITY		7 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	0 / 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	0 / 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	0 / 1
IEQc7.1	Thermal Comfort-Design	0 / 1
IEQc7.2	Thermal Comfort-Verification	0 / 1
IEQc8.1	Daylight and Views-Daylight	0 / 2
IEQc8.2	Daylight and Views-Views for Seated Spaces	1 / 1

INNOVATION IN DESIGN		5 OF 6
IDc1	Innovation In Design	0 / 1
IDc1	Innovation In Design	0 / 1
IDc1.2	Low-Mercury Lighting	1 / 1
IDc1.2	Innovation In Design	0 / 1
IDc1.3	Innovation In Design	1 / 1
IDc1.3	Innovation In Design	0 / 1
IDc1.4	Innovation In Design	1 / 1
IDc1.4	Innovation In Design	0 / 1
IDc1.5	Innovation In Design	1 / 1
IDc1.5	Innovation In Design	0 / 1
IDc2	LEED® Accredited Professional	1 / 1

REGIONAL PRIORITY CREDITS		2 OF 2
WEc1	Water Use Reduction	1 / 1
EAc1.1	Optimize Energy Performance-Lighting Power	1 / 1

**TOTAL** 61 OF 108

## MORE INFORMATION

- >Radcliffe Institute for Advanced Study: <https://www.radcliffe.harvard.edu/>
- >Harvard - Green Building Resource: <http://green.harvard.edu/theresource>

