

Integrative Process

WAYNE STATE UNIVERSITY STEM INNOVATION CENTER



AWARDED STRATEGIES

1 / 1

The following strategies were explored and implemented as part of the integrative design process:

- Site Conditions
- Massing & Orientation
- Basic Envelope Attributes
- Lighting Levels
- Thermal Comfort
- Plug & Process Loads
- Programmatic & Operational Parameters
- Indoor Water Demand
- Outdoor Water Demand
- Process Water Demand

TOTAL - 62 / 110

123,867

Project Square Footage

157.1

Energy Use Intensity Score

\$73,194

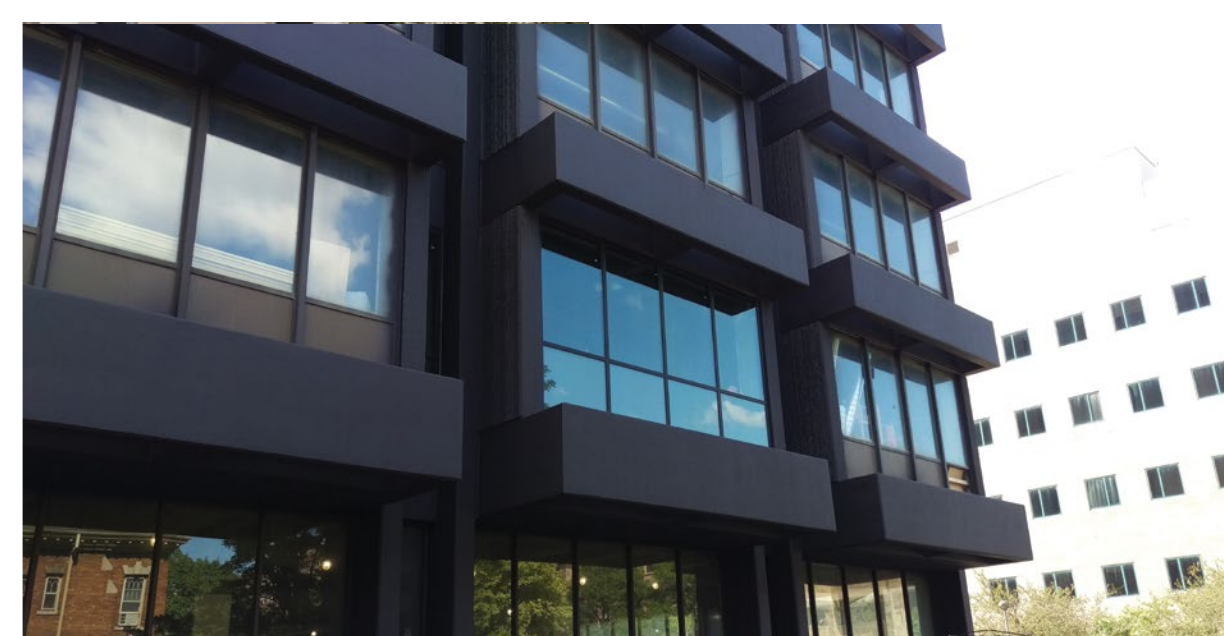
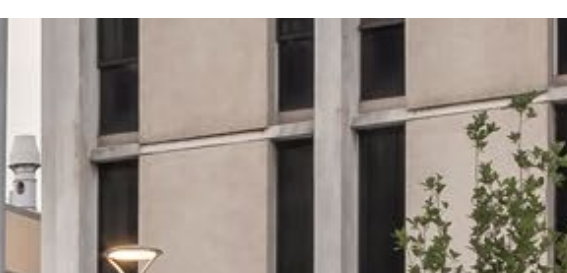
Proposed Annual Energy Cost Savings

16%

Energy savings compared to ASHRAE 90.1-2010 baseline

7

LEED® points achieved for Optimize Energy Performance



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Location & Transportation

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AWARDED STRATEGIES

13 / 16

TOTAL - 62 / 110

Sensitive Land Protection

The site selected was an existing building. The development footprint is located on land that has been previously developed.

High Priority Site

The site selected is located within an Federal Opportunity Zone.

Surrounding Density & Diverse Uses

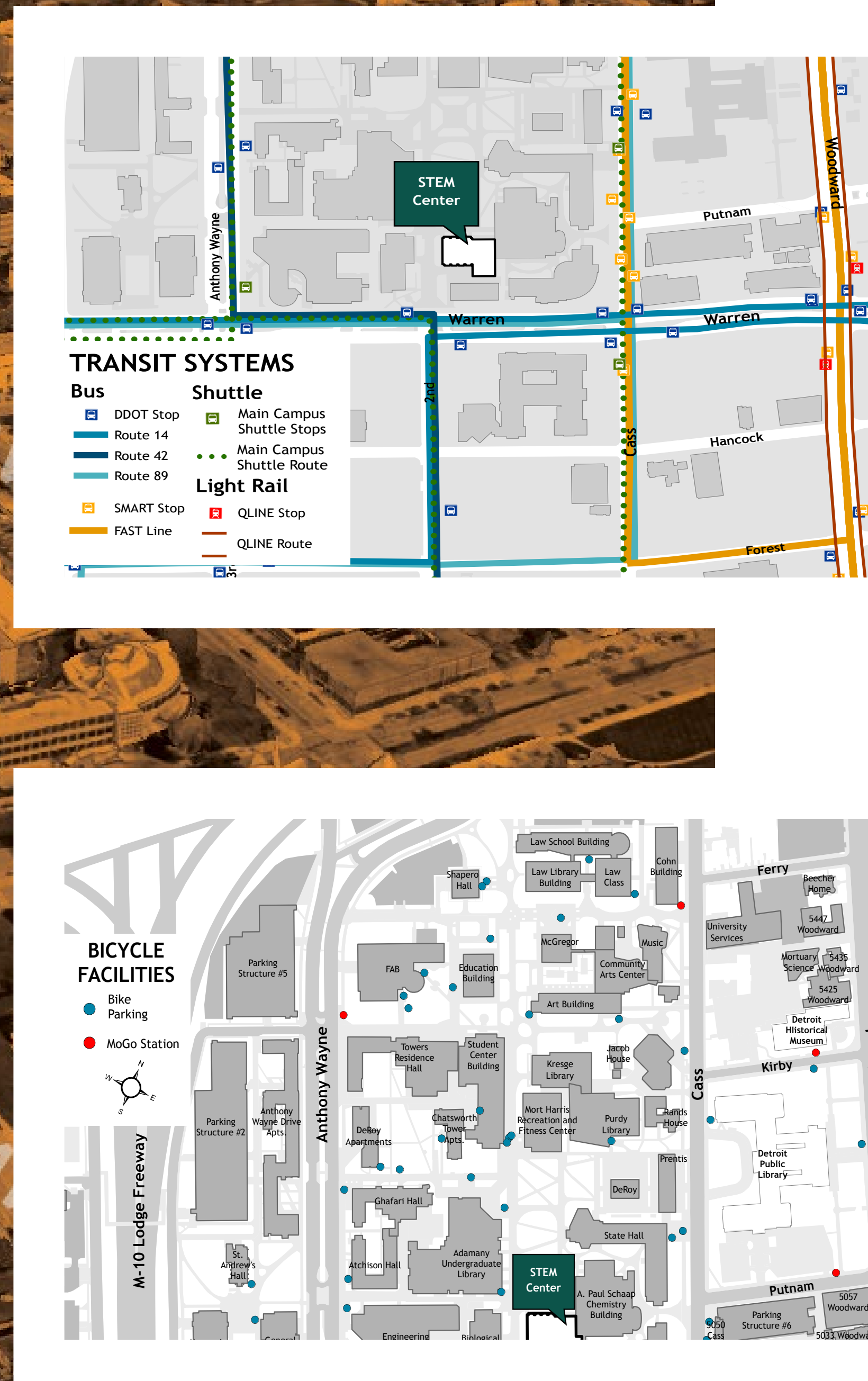
- The site selected for the project has a combined residential and non-residential surrounding density of 40,179 square feet per acre of buildable land.
- The site selected for the project has access to 16+ diverse community uses and amenities within a half-mile walking distance.

Access to Quality Transit

The site selected for the project has access to 620+ weekly transit trips and 370+ weekend transit trips through both bus and light rail transit transportation routes.

Bicycle Facilities

The site selected for the project has access to a bicycle network with 10+ diverse uses, provides a total of 24 short- and long-term bicycle storage facilities within 100 feet of the project entry, and one shower with changing facilities for active commuters.



Sustainable Sites

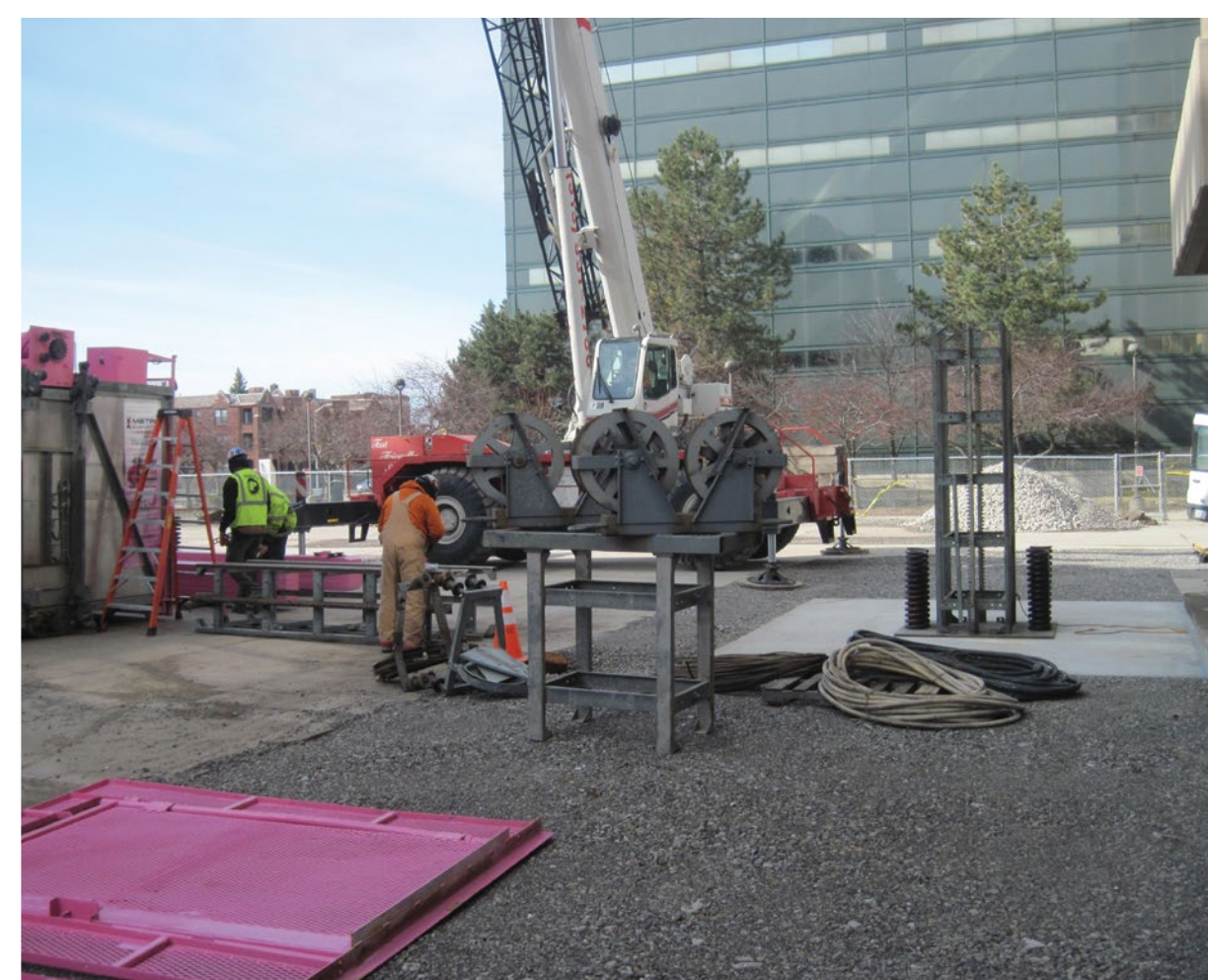
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AWARDED STRATEGIES

4 / 10

TOTAL - 62 / 110



Construction Activity Pollution Prevention

- Installation of inlet protection at existing catch basin structures.
- Installation of fencing and dust screening surrounding construction site.
- Temporary coverings for all onsite piles of soils, sand or gravel to eliminate any erosion.
- Designated construction concrete washout area.
- Interior airways were covered and remained covered for the duration of construction.

Site Assessment

- Completion of a full site existing conditions inventory including the topography, hydrology, climate, vegetation, soils, human use, and human health effects.

Open Space

- The project has provided 24,557 square feet of open space equivalent to 54% of the total site area with 7,808 square feet of the open space being vegetated.

Heat Island Reduction

- The project utilized light concrete with an aged solar reflectance value (SR) of 0.35 a roofing cap sheet with an aged solar reflectance index (SRI) of 81.
- You could take a screenshot of the satellite view to see the light colored roof.



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Water Efficiency

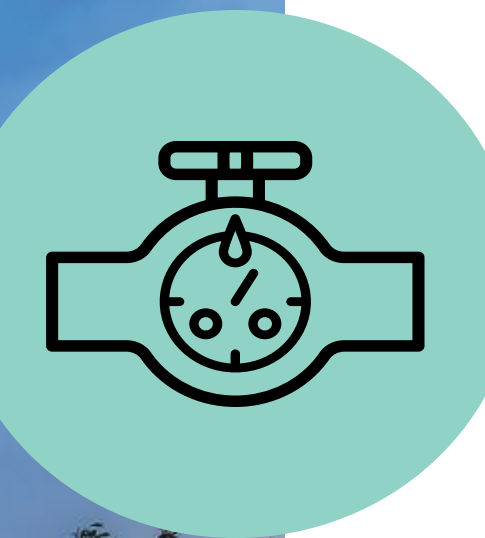
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AWARDED STRATEGIES

4 / 11

TOTAL - 62 / 110



Water Metering

Provided submeters for irrigation and domestic hot water to track ongoing water use.



Indoor Water-Use Reduction

Reduced potable water use for indoor plumbing fixtures by 31% from the calculated baseline through the installation of:

- 1.28 gallons per flush water closets
- 0.125 gallon per flush urinals
- 0.5 gallon per minute lavatories
- 1.75 gallons per minute shower heads



Outdoor Water-Use Reduction

Reduced potable water use for irrigation by 62% from the calculated baseline through native plant selection and efficient irrigation.



AWARDED STRATEGIES

15 / 33

TOTAL - 62 / 110

**Minimum & Optimize
Energy Performance****16%**

total energy cost savings

37.5%

natural gas energy use savings

29.5%

district energy cooling energy use savings

**Fundamental &
Enhanced Commissioning**

- Enhanced Systems Commissioning
- Monitoring Based Commissioning
- Envelope Commissioning

Advanced Energy Metering

Based on the energy model, these three end uses were the three groups that consumed 10%+ of the annual energy use:

- Electrical meters installed for fans
- BTU meters installed for district cooling
- Gas meters installed for space heating

**Enhanced
Refrigerant Management**

Refrigerants in HVAC&R systems minimized the emission of compounds that contribute to ozone depletion and climate change. Based on calculations:

Project's total refrigerant impact:**282,827.28** tons**Project's average refrigerant impact:****90.94** tons

Materials & Resources

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AWARDED STRATEGIES

6 / 13

TOTAL - 62 / 110

Building Life Cycle Impact Reduction

- 98% of existing walls were reused
- 89% of existing floors were reused
- 98% of existing roofs were reused
- Total of

91.66% building reuse

Environmental Product Declarations

- 35 products with Environmental Product Declarations from 13 different manufacturers were used on the project.

Material Ingredients

- 27 products with Health Product Declarations, Cradle to Cradle certificates, and published material ingredient inventories from 14 different manufacturers were used on the project.

Construction & Demolition Waste Management

- Diverted **58.5%** of construction and demolition waste from landfill
- Material streams diverted include metal, cardboard, wood, concrete, glass, gypsum board, and plastic.

Indoor Environmental Quality

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AWARDED STRATEGIES

10/16

TOTAL - 62/110



Enhanced Indoor Air Quality

- Installed permanent entryway systems at regularly utilized entrances.
- Provided separation and exhaust to prevent cross-contamination with chemical use areas.
- Provided CO₂ monitors for densely populated spaces such as labs, hacker space, lecture rooms, and collaboration areas.

Low-Emitting Materials

- The project used low-emitting materials for 100% of paints and coatings, flooring, wall panels and 85.12% of furniture.

Construction Indoor Air Quality

- The site was kept as a safe working environment by limiting dust in the air, using air handlers, and performing a system flushout.
- Construction materials were brought indoors, stored elevated off the floor and away from the building perimeter, and covered until installation.
- Pre-filters were installed with MERV 8 ahead of the mechanical unit filters.
- No smoking was allowed on the site.

Indoor Air Quality Assessment

- Full building flush out prior to occupancy.
- All interior finishes, movable furnishings, and major VOC punch list items were installed and complete before the flush.
- Outside air dampers were commanded 100% open and return air dampers were commanded 100% closed.
- Preheat coils were operational and discharge air temperature set to maintain 60-65 F. Humidity was below 60% for the duration of the flush out period.
- After building flush out, all HVAC filtration was replaced with minimum MERV 13 filter.

Thermal Comfort

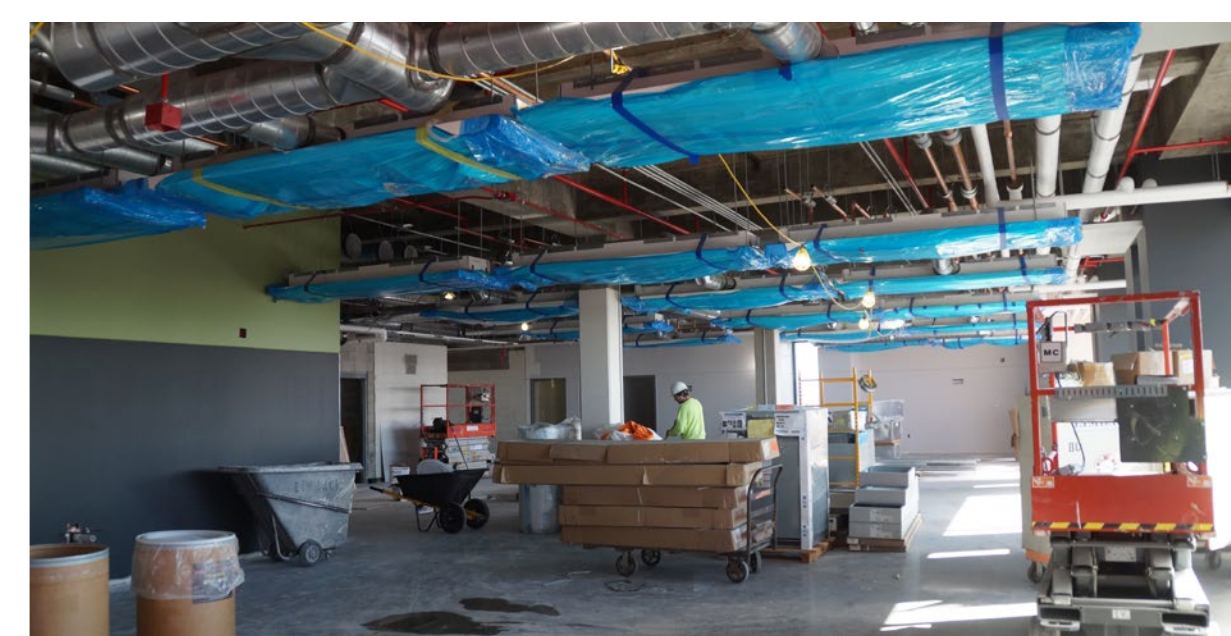
- Controls were provided to the private offices, touchdown spaces, conference, classroom, and collaboration areas.

Interior Lighting

- Controls were provided to 100% of the private offices, touchdown spaces, conference, classroom, and collaboration areas.

Quality Views

- 75% of regularly occupied spaces in the project are provided with access to views.



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EBOM Starter Kit

- Implemented green cleaning and facility maintenance and renovation policies.

Green Education Strategy

- Committed to providing guided tours and created a case study to highlight the sustainability features of the project.

Low-Mercury Lighting

- The lighting design specifies an overall building average of 35 picograms of mercury per lumen-hour or less for all mercury containing lamps purchased for the building.

Pilot Credit for PC129: Comprehensive Composting

Provides organic waste receptacles and regular organic waste collection and:

- Collects food waste
- Provides central collection areas for organic waste
- Provides signage that clearly illustrates what is accepted compost.
- Provides weekly pick-up the organic waste, at a minimum

Exemplary Performance for EQc Low-Emitting Materials

- Achieved five categories of compliance under the Low-Emitting materials credit.

LEED® Accredited Professional

Had at least one LEED® AP BD+C engaged on the project during the design and construction phases of the project.

