Project Description

This new 65,000 gross square foot addition addresses immediate space limitations, meets growing demand for instructional, research, and collaborative spaces for the science, technology, engineering, and math (STEM) disciplines, and creates engineering-specific instructional and research laboratories. As regional, state, and national labor markets call for greater numbers of qualified STEM graduates, this building expansion will enable the University of Michigan-Flint to deliver the highest quality education to ever-increasing numbers of students pursuing degrees in STEM disciplines.

Energy Recovery and Ventilation

Active chilled beams provide cooling, heating, and ventilation; ventilation air forced through the beam produces an induction effect in which warm room air rises and cooler air drops into the space.

Daylight

Transparent partitions and interior glazing allow daylight to penetrate farther into the building, while daylight controls automatically adjust electric light levels.

Ventilation is provided by a 100% outside air energy recovery system (air handler) with an energy recovery wheel, desiccant wheel, chilled water and hot water coils providing air at the required temperature and humidity.

Stormwater Management

Roof water runoff is directed to a bioswale to slow it down, remove suspended solids, and allow infiltration into the soil.

Runoff from sidewalks and plazas is directed through permeable concrete for treatment and infiltration.

A hydrodynamic separator removes coarse sediment and debris from the water runoff, using a circular flow pattern to settle contaminants at the base of the unit.

Building Orientation

The long axis runs east-to-west to provide a bright, daylit interior while taking advantage of direct winter sun for radiant heat.

Buildings are oriented to take advantage of natural light during the summer and provide solar heat gain in the winter.

Roof water runoff is directed to a bioswale to slow it down, remove suspended solids, and allow infiltration into the soil.

Stormwater Management

Roof water runoff is directed to a bioswale to slow it down, remove suspended solids, and allow infiltration into the soil.

Runoff from sidewalks and plazas is directed through permeable concrete for treatment and infiltration.

A hydrodynamic separator removes coarse sediment and debris from the water runoff, using a circular flow pattern to settle contaminants at the base of the unit.

Building Use

Location
Flint, Michigan

Size
63,000 Gross Square Feet

Number of Occupants
490 Daily Average

Design Period: 07/2017 - 09/2018

Construction Period: 03/2019 - 01/2021

* The higher the R-value the better the insulating quality
** The lower the U-value and SHGC the more energy efficient the window
*** The higher the VT value the more daylight in the space. VT is measured between 0 and 1.

Sustainability Facts

William R. Murchie Science Building Expansion

Building Use
Classroom / Laboratory Building

Location
Flint, Michigan

Size
63,000 Gross Square Feet

Number of Occupants
490 Daily Average

LEED version
2009

LEED certification level
Silver

ASHRAE 90.1 version
2007

Energy cost savings compared to ASHRAE baseline
24%

Total electricity savings
353,034 kWh / year

Total electrical savings
287,314 kWh / year

Total gas savings
15,055 Therms / year

Total water savings
221,033 gal / year

Water Future Baseline
2015 Michigan Plumbing Code

Total water savings
36%

Construction/Design waste diverted from landfill
82%

Insulation (R-Value)*

Wall assembly - above grade
0.75

Wall assembly - perimeter wall edge
0.10

Roof assembly
0.54

Glazing - Fixed assembly
0.60

U-value**

0.51

Solar Heat Gain Coefficient (SHGC)**

0.46

Visible Light Transmittance (VT)***

0.61

Project Team

Owner
University of Michigan - Flint

Architect
Harley Ellis Devereaux

Engineer
Harley Ellis Devereaux

Contractor
Commercial Contracting Corporation

Commissioning Authority
Fishbeck

Project Management
U-M AEC

Design Period: 07/2017 - 06/2018

Construction Period: 03/2019 - 01/2021

* The higher the R-value the better the insulating quality
** The lower the U-value and SHGC the more energy efficient the window
*** The higher the VT value the more daylight in the space. VT is measured between 0 and 1.