



Project Description

The project consists of approximately 57,000 gross square feet of renovation and 66,000 gross square feet of new building construction. The building includes classrooms, research and teaching laboratories, faculty offices, student support spaces, and regional boiler and electrical distribution equipment replacement. This facility's new active learning studio

approach will facilitate entrepreneurial problem solving and complement the more product development-oriented laboratories of industry partners. Additionally, multidisciplinary collaboration is encouraged in the context of 21st century engineering and academic pathways to exceptional careers will be offered for decades to come.



Regional Boiler Plant

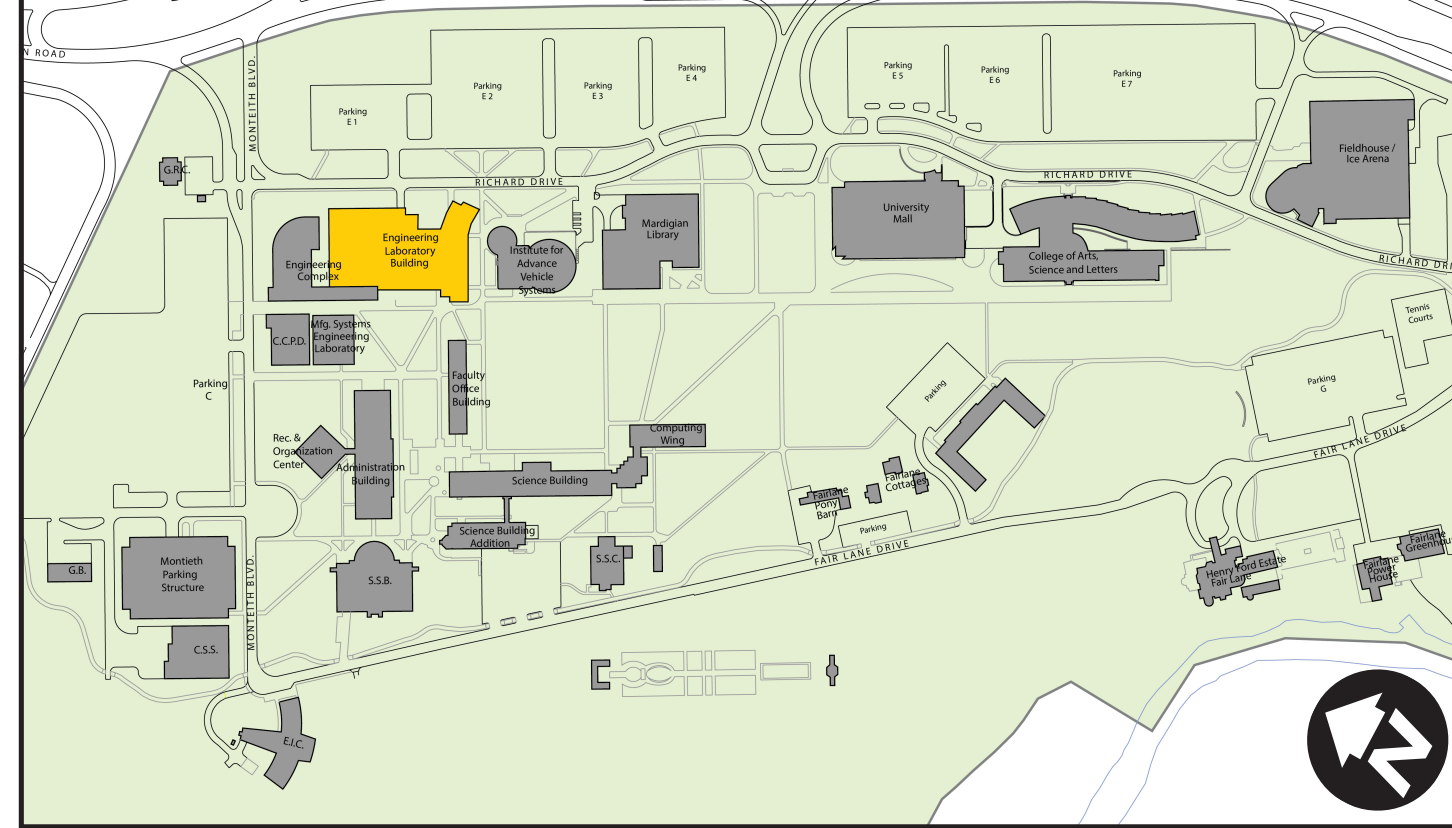
- The existing regional boiler plant housed within the building was renovated with three new natural gas boilers providing heating and hot water to campus
- Boilers were resized to allow for greater efficiency, improved redundancy, and lower operating costs
- Digital sensors and controls improve safety and boiler efficiency

Aluminum composite metal panels adhered to a rainscreen attachment system control moisture and save energy by reducing thermal bridging

Horizontal solar shading devices control the amount of direct sunlight entering the building



Project Location: U-M Dearborn



Repurposed Tree
An oak tree removed to accommodate construction was repurposed as tables for the interior

Flexible Space

- Designed to accommodate multiple student activities and public gatherings, the central gathering space includes an open floor plan, movable walls, a 29-foot digital display board and exterior doors large enough to accommodate a car
- Active learning and multidisciplinary cooperation are encouraged with configurable furniture and technology in formal and informal spaces



▲ Building Envelope ▼

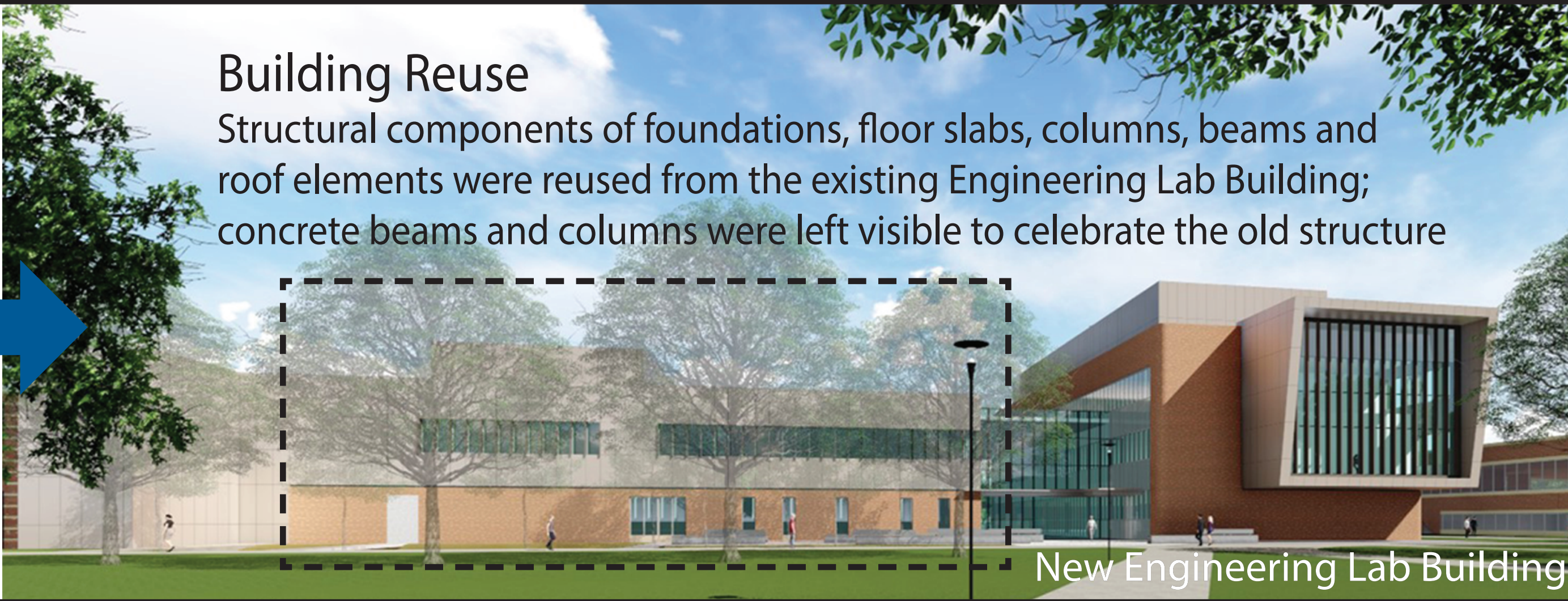
Windows provide ample views to the outside and a connection to the campus community; natural daylight reduces lighting load and electrical consumption



1950s Engineering Lab Building



Structure Re-use



New Engineering Lab Building

Building Reuse

Structural components of foundations, floor slabs, columns, beams and roof elements were reused from the existing Engineering Lab Building; concrete beams and columns were left visible to celebrate the old structure

Sustainability Facts

Dearborn Engineering Lab Building Replacement
 Building Use: Engineering Lab Building
 Location: Dearborn, Michigan
 Size: 123,000 Gross Square Feet
 Number of Occupants: 316 Daily Average

LEED version	v2009	
LEED certification level	Gold	
ASHRAE 90.1 version	2007	
Energy cost savings compared to ASHRAE baseline	35%	
Total energy savings	\$187,061 / year	
Total electrical savings	502,347 KWh / year	
Total gas savings	98,211 Therms / year	
CO2 emissions avoided	875 metric tons	
Water fixture baseline	2012 Michigan Plumbing Code	
Total water savings	36%	
Construction/Demolition waste diverted from landfill	59%	
Insulation (R-Value)*	Code	Project
Steel frame wall assembly - above grade	15.6	16
Concrete masonry unit wall assembly - above grade	15.6	16.8
Insulated metal panel wall assembly - above grade	15.6	22
Spandrel panel wall assembly - above grade	15.6	8
Roof assembly	20	25
Glazing - Curtain wall system		
U-value**	0.45	0.30
Solar Heat Gain Coefficient (SHGC)**	0.40	0.30
Glazing - Visible Light Transmittance (VT)***	0.31	

Project Team

Owner	U-M Dearborn - College of Engineering and Computer Science
Architect	SmithGroup
Engineer	SmithGroup
Contractor	Granger Construction Company
Commissioning Authority	Fishbeck
Project Management	U-M AEC

Design Period: 09/2016 - 02/2019
 Construction Period: 05/2018 - 02/2021
 * 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

