Henry W. Bloch Executive Hall

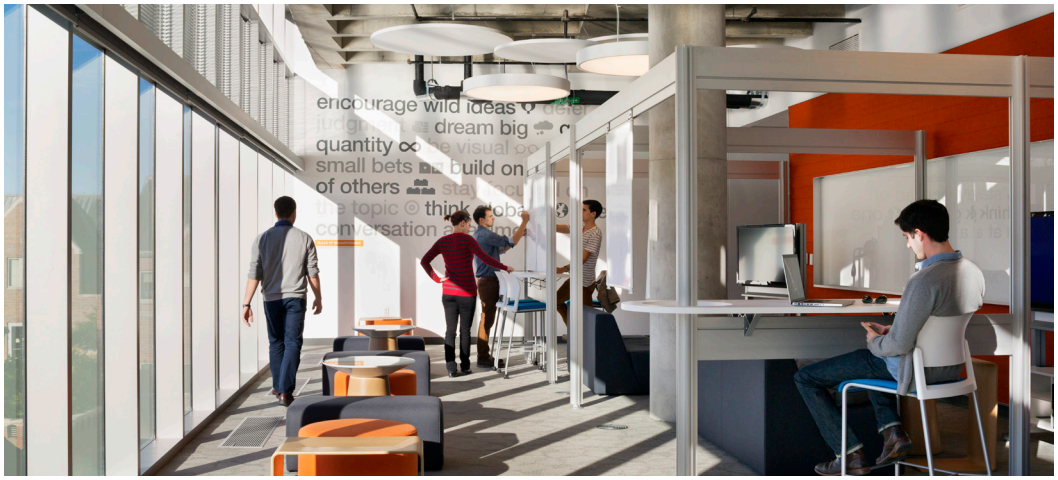
University of Missouri-Kansas City | Kansas City, Missouri

New Approaches to Daylight Design

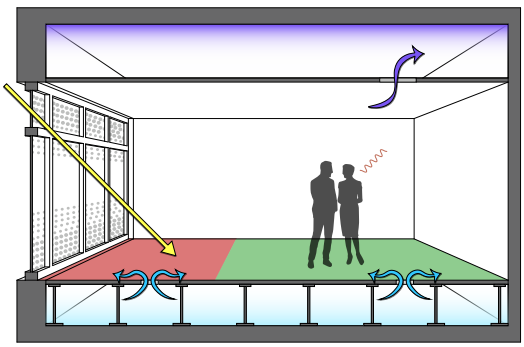
BranchPattern worked in an integrated manner with the architect early in the design to optimize the building architectural form and reduce the heating/cooling loads. Due to this approach, the building was able to connect into the existing (and nearly at capacity) campus-chilled water plant without requiring any upgrades, saving the University millions by deferring these capital upgrades.

In addition to providing full MEP Engineering services and energy modeling, our Research & Development team also conducted a unique daylighting study, leveraging tools developed by BranchPattern in-house. Rather than using a traditional approach that quantifies the efficacy of daylighting based on energy savings, our R&D team used a custom calculator that allowed us to compare options based on their predicted impact on learning. A series of simulations focusing on daylight levels and glare were analyzed using these calculators, with the preferred strategies being those that showed the most favorable results in predicted test scores.

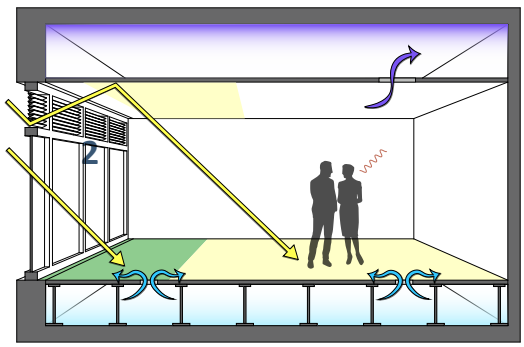
These approaches, combined with the university's first use of underfloor air distribution and displacement ventilation, yielded a technology-rich building that still performs at 40% below the ASHRAE 90.1-2007 baseline. As a result, the project achieved LEED Gold Certification.



OPT 1 GRADIATED FRIT



OPT 2 LIGHTLOUVER + SHADES



INTOLERABLE GLARE | IMPERCEPTIBLE GLARE | QUALITY DAYLIGHT

Metrics

New Construction

68,000 sf

$32 Million

Specialisms

MEP Engineering

Building Performance Modeling

Research & Development

Impacts

LEED Gold Certified

Completion

August 2013

Awards

2014 Capstone Award

2013 DBIA Citation Award

2013 Excellence in Concrete Award

Reference

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