

An Allston Metamorphosis?

Harvard's first science complex in Allston will be big by any measure. One thousand people will work in a facility designed as four buildings totaling 530,000 square feet above ground, with another 165,000 square feet of working space below grade, and additional underground areas for parking, utilities, and other services. The entire complex, which will comprise nearly a million square feet, represents the vanguard of what has been conceived as an environmentally "sustainable" campus for the University.



Continuity of the spatial character of Harvard's quads and open spaces is one guiding development principle identified during the conceptual design phase. An academic greenway (left) would link Harvard's existing green space with the new science yard south of Western Avenue. There, architects propose four connected buildings (bottom, now at the 10 percent design stage) that would function as a single complex.

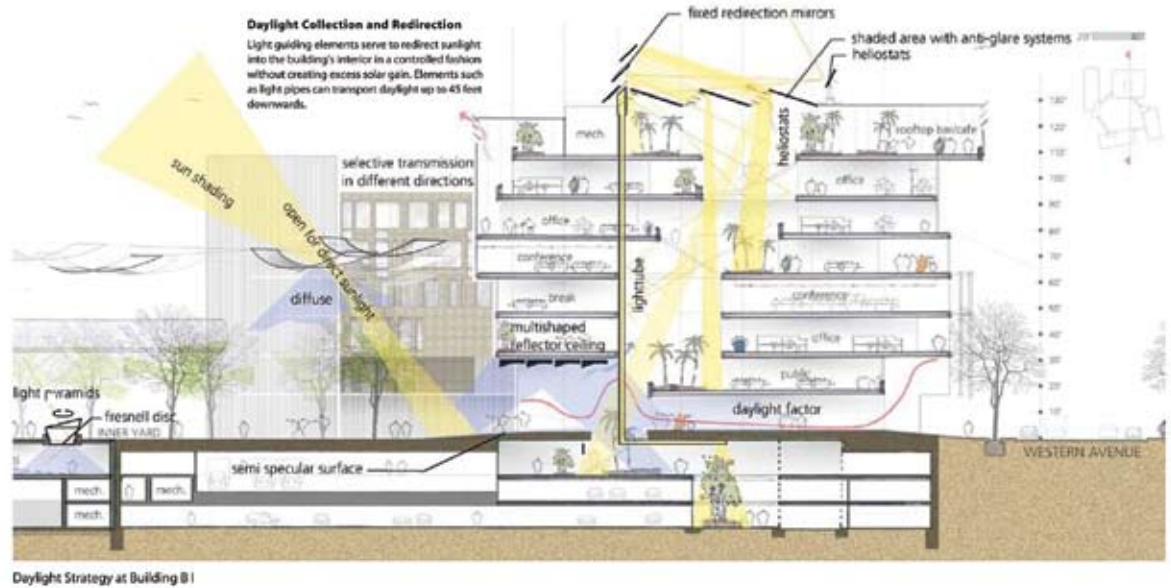
This commitment poses a challenge, because science buildings are especially energy intensive—laboratories account for 17 percent of Harvard's square footage, but 46 percent of its utility costs—and the Allston campus is being planned with a large science component. Yet by choosing Stuttgart-based Behnisch Architects, a firm recognized for sustainable-design work, to create the first buildings there, Harvard took a concrete step toward creating the "green" campus envisioned in planning documents prepared last year. The architects are attempting to incorporate advanced energy-efficiency features into designs that will also conserve resources such as water; if the results satisfy Harvard users and planners, the complex will set a precedent for subsequent Allston projects. "The goal is to make Allston a highly sustainable campus, and Harvard has the resources to do it," says Christopher Gordon, chief operating officer for the Allston Development Group (ADG).

Behnisch Architects has already designed the widely praised Genzyme Corporation headquarters, which stands a few miles east of Allston in Cambridge's Kendall Square and has earned the highest Leadership in Energy and Environmental Design (LEED) rating from the nonprofit U.S. Green Building Council. The rating system provides quantitative standards for designing, constructing, and operating buildings that will conserve resources and provide healthy work environments. Buildings earn LEED recognition for limiting energy and water use, using renewable and recycled materials, controlling erosion and stormwater runoff, and maximizing "indoor environmental quality" with features such as natural lighting, efficient ventilation, and zoned heat that provide both aesthetic and environmental benefits.



Conceptual Model highlighting links between buildings and connections to central courtyard

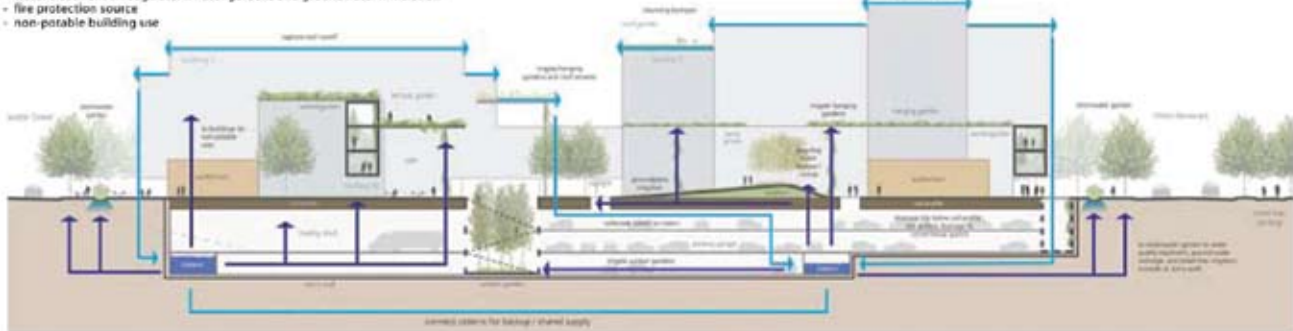
Behnisch Architects are designing the science complex to capture as much natural light and outside air as possible. Such enhancements to indoor environmental quality promote improved occupant health and productivity. The buildings are also being designed to capture storm water for a variety of possible applications, including irrigation of interior and exterior plantings, or for fire protection or other non-potable use.



Open Space and Storm Water Management Diagram

Potential uses for captured runoff:

- irrigation of interior and exterior gardens
- recycling water feature in courtyard
- water wall for exterior microclimate
- water supply/deposition for winter garden de/humidification
- water treatment through stormwater gardens and groundwater infiltration
- fire protection source
- non-potable building use



LEED buildings typically cost 2.5 to 5 percent more to construct than conventional facilities, but because they use less energy and water, they recoup this premium over time through lower operating and maintenance costs. According to a study conducted for Harvard by sustainability consultant Atelier Ten, designing buildings to a high LEED standard could reduce expected heating, cooling, and electrical loads in Allston by more than 50 percent. This would lower not only operating costs (by cutting fuel consumption), but also capital costs, by allowing the University to build smaller energy plants. (Harvard today spends more than \$40 million a year on heating, cooling, ventilation, and electricity for campus buildings.)

Since 2001, a group of faculty experts, University operations officers, and technical support staff organized as the Harvard Green Campus Initiative (HGCI) has worked to catalyze environmental initiatives on the Cambridge and Longwood campuses. In 2004, the group's work led to Harvard's official adoption of six general sustainability principles. Capital projects, for example, are now required to establish specific objectives consistent with these principles as part of the formal review process.

"With 11 LEED projects now under our belt, [the University] is ready and able to tackle this most complex building typology

and make it a model for campus sustainability," says HGCI director Leith Sharp, who came to Harvard after six years of work on campus environmental management at the University of New South Wales in her native Australia. "All of the key ideas about the new science building, such as energy supply and wastewater treatment, are being evaluated through a sustainability lens."

Use of geothermal heat is being "looked at very seriously," says Gordon, as is construction of solar chimneys to effect air exchange within the buildings. Demolition and site preparation for the complex, now in the "10 percent design" phase, may start as early as next summer, with occupancy possible by 2010. The facility will house the Harvard Stem Cell Initiative, the Harvard Institute for Biologically Inspired Engineering, and other interdepartmental initiatives such as systems biology, innovative computing, and perhaps chemical biology.

Harvard's nascent plans for Allston are attracting attention from other urban institutions around the nation, says Perry Chapman, a principal with the architectural and urban design firm Sasaki Associates, which specializes in college campuses. "It would be intriguing if the country's oldest college and corporation end up setting the terms for twenty-first-century campus development in the urban environment."

~JENNIFER WEEKS