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*International Projects That
Push The Boundaries*

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AWARDS

COLLEGES AND UNIVERSITIES

GREEN AND ACADEME

The latest crop of campus buildings reflects student values while providing top-notch environments for study and research.

By Joann Gonchar, AIA



**YALE UNIVERSITY
SCULPTURE BUILDING
AND GALLERY**
New Haven, Connecticut

KieranTimberlake inserts a set of buildings within an urban block and surrounds studios with a high-tech curtain wall.



**ARIZONA STATE
UNIVERSITY ISTB 1**
Tempe, Arizona

Perkins+Will responds to climate and program with a sculptural composition that takes its cues from the path of the sun.



MIT PDSI
Cambridge, Massachusetts

Payette drops a mostly glass-enclosed addition in the courtyard of a Beaux-Arts structure, creating a dynamic, daylight-filled space within.

If the recent proliferation of lists and rankings that measure the commitment of colleges and universities to sustainability is any indication, environmental stewardship is a high priority for prospective students. The nonprofit Sustainable Endowments Institute has a College Sustainability Report Card. Grist and Forbes magazines have published lists of the greenest schools. And college guides from test-prep companies Princeton Review and Kaplan include a category for environmental responsibility. These organizations and publications evaluate institutions on the basis of criteria such as course offerings, purchasing practices, and energy use. Naturally, new buildings play an important role, not only in the race to be dubbed the most environmentally friendly, but also in the quest to provide the best and most up-to-date facilities for study and research. This month's building types study examines a small sampling of such undertakings.

With its LEED Platinum-rated Sculpture Building and Gallery at the edge of Yale University's New Haven campus, KieranTimberlake transforms a former surface parking lot into a complex of three buildings and a parklike green space. In so doing, it helps repair the surrounding urban fabric. An extremely energy-efficient but transparent curtain wall envelops the main structure, providing controlled daylight well-suited for making art.

At Arizona State University, in Tempe, Perkins+Will responds to a very different program and climate with the Interdisciplinary Science and Technology Building 1. The 175,000-square-foot LEED Gold lab is made up of two interconnected sculptural volumes that frame a courtyard and have varied elevations that take their cues from the path of the sun.

The Massachusetts Institute of Technology did not pursue LEED for the project known as PDSI, which houses facilities for physics, the department of materials sciences engineering, spectroscopy, and infrastructure. Nonetheless, PDSI illustrates an undeniably sustainable approach. Instead of building entirely anew, Payette builds within a courtyard in a vast domed complex. In addition to increasing the density of MIT's building stock, it provides updated and more efficient mechanical infrastructure to a large section of the complex, and more important, it fosters social interaction and scientific collaboration.

Given the current economic uncertainty, it is anyone's guess if other ambitious and environmentally responsible projects like these will move forward on U.S. campuses. If the stock market plunges further and credit remains tight, the health of endowments, the largess of donors, and the ability of schools to borrow will surely be adversely affected. However, one can hope that institutions will build sustainably with whatever limited resources are available. If the sheer number of lists ranking schools on the basis of environmental policies and practices is an accurate measure, student appetites for all things green are unlikely to abate anytime soon. ■

Three: MIT PDSI

Cambridge, Massachusetts

Payette drops a new structure inside a group of buildings, creating a bold, interactive space while updating its century-old neighbors.

By Josephine Minutillo

Architect: Payette—James H. Collins Jr., AIA, principal in charge; Charles Klee, AIA, project architect; Jeff DeGregorio, AIA, Ronald F. Blanchard, AIA, Sarah Radding, AIA, Surajit Nandi, Stephanie Schwarz, Deborah Abraham, Michael Wislon, Santiago Garay, project team

Consultants: Imai Keller Moore Architects (associate architect for renovations); SEi Companies (now WSP Flack+Kurtz)(m/e/p/fp); Weidlinger Associates (structural)

General contractor:

Richard White Sons

Client: Massachusetts Institute of Technology

Size: 50,000 square feet (new construction); 75,000 square feet (renovated construction); 217,000 square feet (infrastructure improvements)

Completion date: May 2007

SOURCES

Metal/glass curtain wall: Vistawall

Chilled beams: Trox

Resilient flooring: Nora Systems (rubber); Atlas Carpet Mills (carpet)

Ceilings and suspension: Decoustics Limited (acoustical); Chicago Metallic Company (metal baffle); Armstrong

Doors: Columbus Door Company (wood); Total Door (fire-control)

Sliding privacy panels: Lumicor

ONLINE: Rate this project and access additional sources at architecturalrecord.com/bts/.

When the architects at Boston-based Payette suggested that the best and most efficient way to renovate a group of old buildings was to build a totally new structure within their walls, the client was understandably skeptical. And when your client is a collection of world-renowned scientists and mathematicians accustomed to being the smartest people in the room, you've got to really make your case.

But Payette isn't intimidated by brainy academic types. The firm has built countless research facilities, laboratories, and residence halls at top universities across the U.S., and as far away as Pakistan. The folks at the Massachusetts Institute of Technology (MIT), in Cambridge, Massachusetts, on the other hand, have had plenty of experience dealing with capricious architects, having recently completed several noteworthy, and controversial, campus buildings by Steven Holl, Charles Correa, and Frank Gehry.

Program

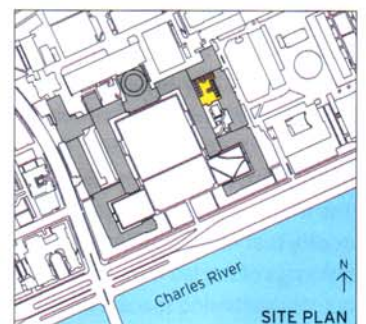
Facing the Charles River and surrounding the vast lawn of Killian Court at the heart of MIT's campus, the Main Group – a 1-million-square-foot complex erected in phases during the early part of the 20th century – serves as an icon of the institution. Practically, however, the old, narrow buildings' outdated infrastructure and endless corridors could not support current



PDSI's mostly transparent structure was inserted into a courtyard of MIT's Main Group (above). The colorful terrazzo floor of the 20-foot-wide atrium between PDSI and existing buildings features designs by Sol LeWitt (opposite).

modes of instruction and research.

MIT's physics department, one of the largest in the world, was scattered throughout this complex and other, newer buildings. In desperate need of more and contiguous space, the department heads were faced with either a costly renovation of the Beaux-Arts structure (whose rigid geometry would still inadequately address the collaborative nature of their work), or building from scratch elsewhere. "The Main Group was becoming like an 'inner city' where only offices were left behind and research was going on in new facilities in the 'suburbs,'" explains Marc Kastner, dean of the School of Science. "We wanted to try and use it as it was meant originally – as an integration of science, education, and community."



Solution

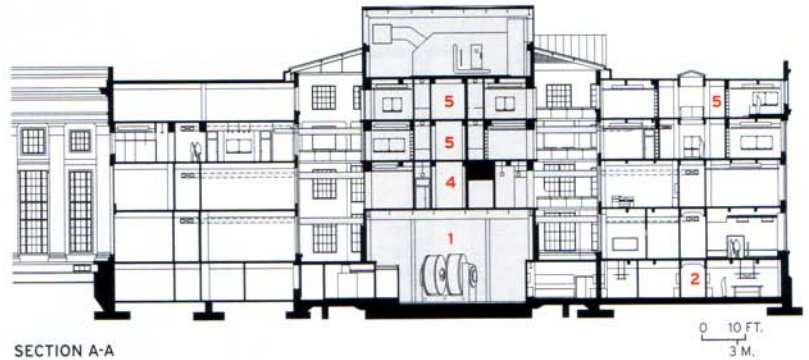
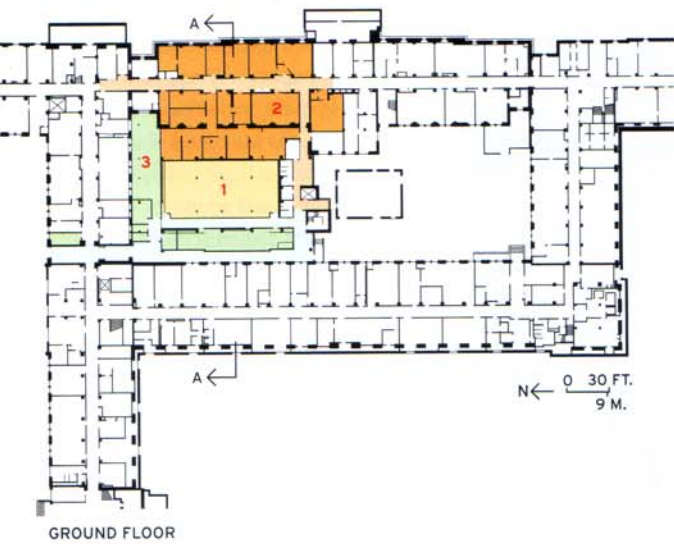
Enter Payette, who provided the department with a radical third option. Its proposal to insert a new building – which would eventually be known as PDSI because it incorporates Physics, DMSE (Department of Material Sciences Engineering), Spectroscopy, and Infrastructure – inside the courtyard of the Main Group's eastern half was akin to



Renovated spaces in the existing buildings were opened up for light and views. Monumental columns gracing Killian Court are revealed from a lounge area converted from closed offices (right). Skylights were added (far right). A cantilevered staircase and glass-railed catwalks add dynamism to the infill building (below).



PHOTOGRAPHY: © ROBERT BENSON PHOTOGRAPHY (TOP LEFT AND OPPOSITE); PETER VANDERWARKER (TOP RIGHT AND BOTTOM)



1. High-bay laboratory
2. Spectroscopy
3. Mechanical/electrical
4. Demonstration group
5. Physics Theory Center

Chalkboards, one of a theoretical physicist's principal tools, are located throughout the informal meeting areas and are made from authentic slate (below).

trying to build a ship in a bottle, or so everyone feared. The biggest concern was not only that the insertion would turn out poorly given the tight quarters, but that it would ruin the spaces abutting it by cutting off views and access to natural light.

But the scheme had several undeniable advantages, which eventually secured it the green light. Initially referred to as a technology tower, the project conceals all the necessary infrastructural upgrades inside the enclosed space of the courtyard, without having to put large air-handling and electrical equipment on the roof, where it would be visible from the street. Hidden behind the historic facades, the design was not subject to approval by Cambridge preservationists, who are famously tough on new construction. An existing 6-foot-thick concrete foundation in the middle of the courtyard was manipulated to support the new building.

More than that, however, the project maintains the spirit of connectedness of the Main Group's original design, with a modern twist. Rather than noisy double-loaded corridors to which professors typically shut their doors, PDSI bridges the existing buildings in a dynamic assembly that promotes social interaction and scientific collaboration.

And far from being the dark, cramped space that many envisaged, PDSI is instead a light, airy building that provides enhanced



PDSI's diaphanous skins and subtle slab edges maintain an open and light feeling in the courtyard. Some areas feature sliding privacy screens.



views and improved circulation for adjacent spaces. Wrapped on all sides in glass, including extensive skylights, the building's diaphanous facades are articulated by brise-soleils, operable windows, and translucent sliding screens. Metal baffles in the ceilings further that open feeling. PDSI is one of the first American buildings to incorporate highly efficient chilled beams, which are visible just above the baffles (see technology article, page 182).

Within the 20-foot-wide atrium space surrounding the new building on three sides between itself and the existing buildings are chases, catwalks, and cantilevered stairs to connect people and new technology. As part of MIT's Percent-for-Art program – which requires the inclusion of public art in new construction projects – the ground floor of this space is covered in vibrant panels designed by the late Sol LeWitt and executed in glass and epoxy terrazzo. Beneath it is a double-height laboratory space in which to run large experiments, a luxury at the center of campus. The upper floors are defined by the multilevel Theory Center, lecture rooms, labs, offices, and informal gathering spaces for discussions as well as classes.

Commentary

PDSI's "sphere of influence," as the architects refer to it, extends well beyond its immediate surroundings. From a technical perspective, the project delivers new mechanical and electrical infrastructure to the corridors of a large section of the Main Group, allowing individual spaces to "plug in" to those upgraded systems as they get renovated. But the project's success is far more palpable on a human level. Since its completion more than a year ago, the space is constantly alive with activity, from spontaneous chalkboard sessions to frequently changing art exhibitions featuring the work of professors and prominent artists. Despite a highly disruptive, two-year-long construction process, enthusiasm for PDSI has led to talk of future infill projects at the Main Group, with PDSI serving as a prototype. ■