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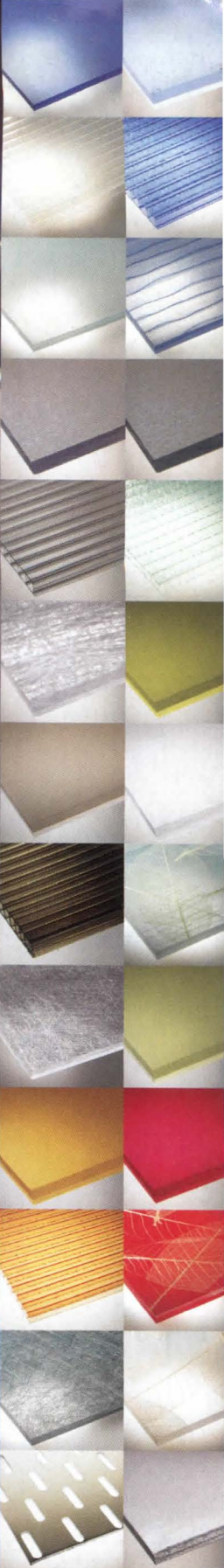
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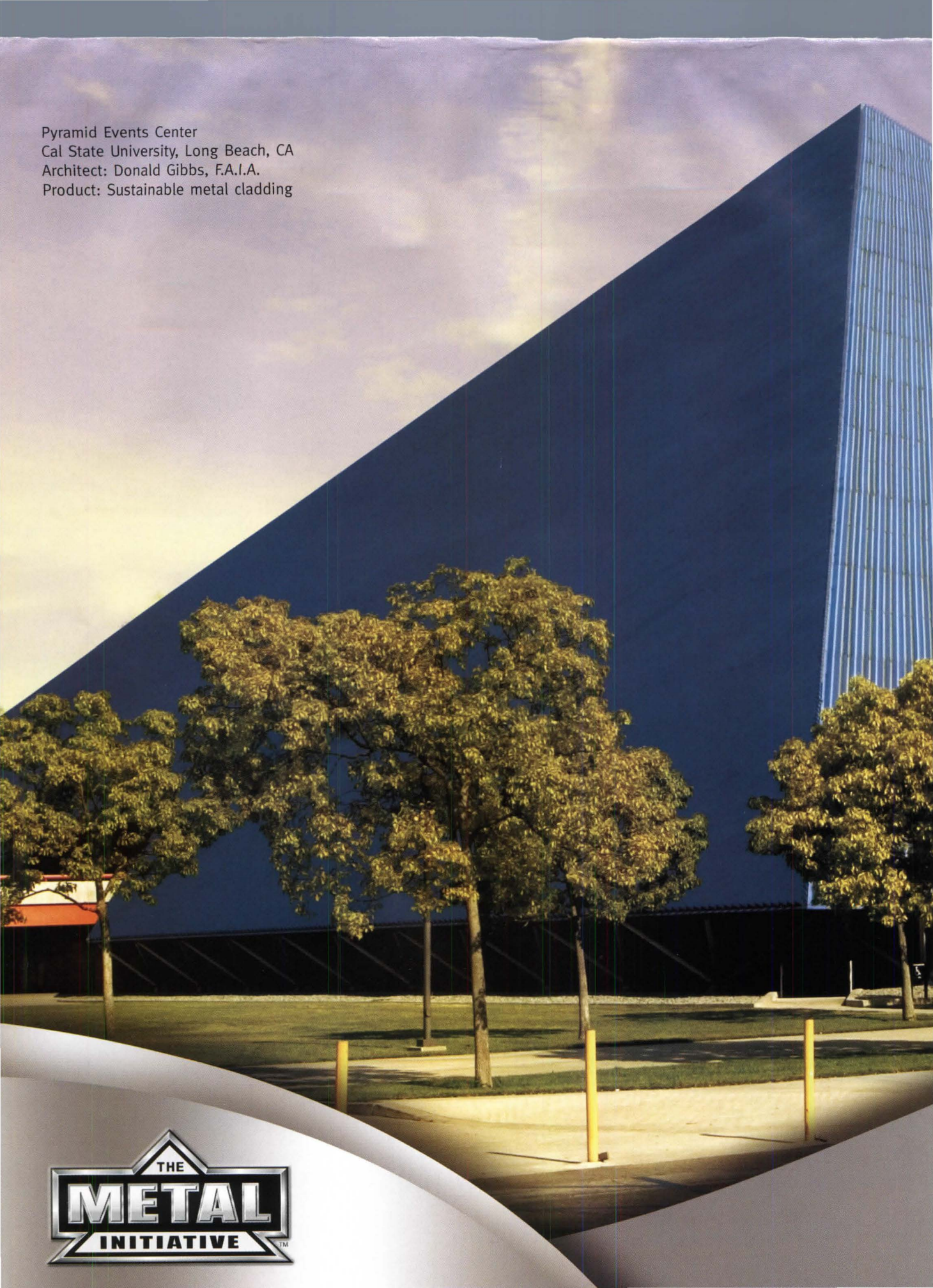
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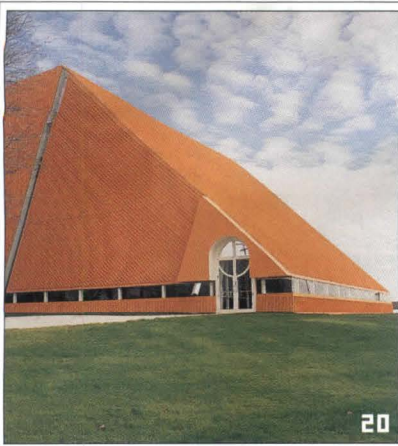
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45 A jumbo jet is towed beneath the glazed passenger bridge that spans a Gatwick Airport taxiway.



practice

20 **GUNNAR BIRKERT'S ORGANIC LIFESTYLE**
Branded a heretic early in his career, the architect has held to his methods even as his restless form-making evolves.
INTERVIEW BY MARTIN SCHWARTZ

27 **THE GREEN GIANT**
A long-awaited LEED standard for existing buildings makes a debut, and a debate.
BY ROBERT KLARA

31 **WHO'S THE BOSS?**
Not content to let clients hold all the cards, maverick firms are generating their own projects.
BY ANNA HOLTZMAN

37 **FIRM | KNOW THY CONTRACT DOCUMENTS** BY ROBERT KLARA

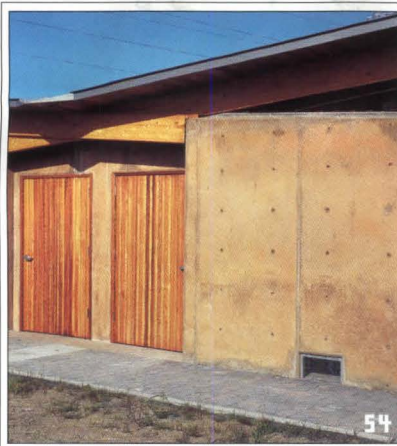
11 EDITORIAL

12 LETTERS

15 NEWS

82 VIEWS

88 **PROTEST**
Is a new Renzo Piano exhibition an architectural feast, or a fundraiser? BY EDWARD KEEGAN



design

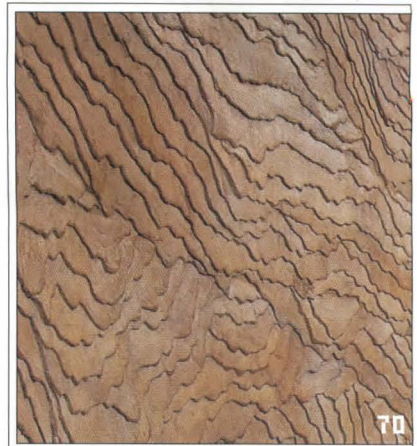
41 **ON THE BOARDS**
A sports center in South Africa, Renzo Piano at the Art Institute, a Gensler airport concourse, and new life for an old Navy yard.
EDITED BY ABBY BUSSEL

45 **SKY WALK**

46 **ABOVE BOARD**
The longest bridge ever to span an active taxiway hovers above the tarmac at London's Gatwick Airport. BY CATHERINE SLESSOR

54 **FORCE OF NATURE**
A desolate swath of San Mateo shoreline is remade for public use by an interdisciplinary team.
BY SALLY B. WOODBRIDGE

62 **INSTRUCTIVE SPACES**
Ohio State's new architecture school, by Mack Scogin Merrill Elam Architects, has pedagogical ambitions. BY KATIE GERFEN



process

68 **APPLE'S CORE**
The simple lines of Apple Computer stores belie complex inner workings.
BY ANNA HOLTZMAN

70 **ORGANIC IDEAS IN CONCRETE SHELTER**
Earth-inspired dwellings still tend toward a cement-centric palette. BY C.C. SULLIVAN

76 **TECH | PRINTWARE FOR THE POST-PLOTTER WORLD**
New software and hardware for large-format printing mean systems tailor-made for any practice. BY KATIE GERFEN

78 **SOURCES | COATINGS**

80 **SOURCES | MASONRY AND STONE**

81 **SOURCES | CERAMIC TILE**

87 **AD INDEX**

Volume 94 Number 7

Architecture® (ISSN 0746-0554; USPS 009-880) is published monthly by VNU Business Media, Inc., 770 Broadway, New York, NY 10003-9595. Copyright 2005 by VNU Business Media, Inc. For subscriptions: Single copies [USA]: \$8.95. Single copies [Foreign]: \$11.00. 1 year: \$59.00. Canada: 1 year: \$69.00. Foreign: 1 year: \$199.00. Allow 4-6 weeks. Periodicals postage paid at New York, NY, and at additional mailing offices. Canadian Post International Publications Mail Sales Agreement No. 40031729. Printed in the U.S.A. **POSTMASTER:** Send address changes to Architecture, P.O. Box 2099, Skokie, IL 60076-7999. Send undeliverable Canadian Addresses to Deutsche Post Global Mail, 4960-2 Walker Road, Windsor, ON N9A 6J3

→ COVER | TABLE OF CONTENTS

The longest passenger bridge ever to span an active airport taxiway opened in May at Gatwick Airport in London. The 646-foot-long overpass was designed by British firms Arup and WilkinsonEyre.Architects. Images this page (left to right): Calvary Baptist Church of Detroit by Gunnar Birkerts; Shoreline Parks by Endres Ware; and a wall of thin-set mortar.

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August 26, 2005

EXTENDED DEADLINE

August 30, 2005

(see No. 18, additional fee required)

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2 REAL PROJECTS ONLY All entries must have been commissioned for compensation by clients with the intention and the authority to carry out the submitted proposal. A project entered in a design competition is eligible if it is the one proposal the competition's sponsor intends to build.

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17 ENTRY CATEGORIES Identify each submission on its entry form by type (see entry form). Mixed-use facilities should be classified by the largest function. There is no "miscellaneous" category.

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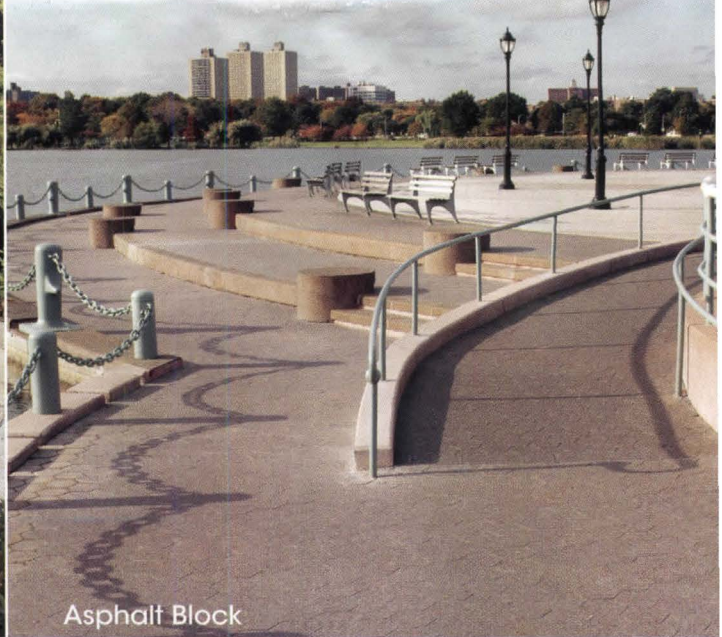
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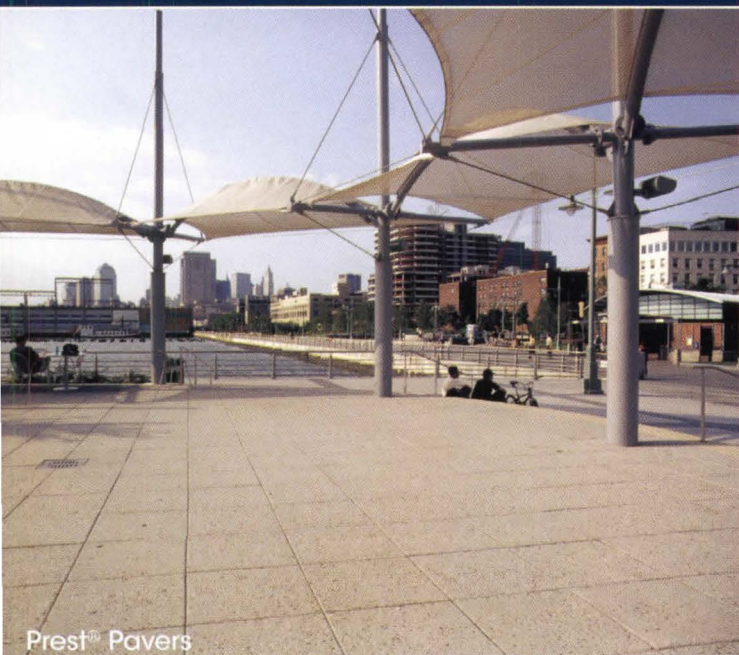


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OUTSIDE THE BELTWAY

BY C.C. SULLIVAN

Summer's a time to ditch the laptop, catch up with friends and family (and reading), and get out and enjoy the scenery. It's also when our elected officials grant themselves plenty of time off—which ever-industrious architects tend to view with suspicion (and a tinge of envy). While our leaders sun their pointy heads, let's consider a few political topics of perennial interest to the profession—but of little apparent consequence in the halls of government. When they're back in their leather chairs, perhaps our legislators will hear from us on these:

WE NEED AFFORDABLE, LIVABLE HOUSING

With millions of Americans squeezed by the housing bubble, why are politicians mute on the subject? Happily, there's fresh hope: Congress is quietly considering a proposal to support low-cost housing by earmarking to the cause 5 percent of profits earned by Fannie Mae and Freddie Mac, the federal mortgage goliaths whose cartoonish names belie the \$20 billion margin they'll pocket this year. But there's opposition, mainly on doctrinal grounds, from antiwelfare forces.

Reinvesting mortgage profits in housing the less fortunate is both sensible and cosmically just, say practitioners involved in similar state programs, and it complements the limited effect of tax credits. And meanwhile, many architects continue aiding private and nonprofit groups fighting valiantly for more affordable—and more livable—housing for all. Last year brought a record number of charitable charrettes, competitions, and homebuilding campaigns displaying far more creativity than our elected bodies have managed.

LET'S FACE UP TO EARTH CHANGES

Just as they've treated housing as no big deal, so have many officials denied the issue of climate change. Last month, an "environment adviser" to the White House—a former oil-industry lobbyist with no scientific credentials—brazenly changed the wording in major reports on climate change to cast greater doubt on the entire phenomenon. Of course, there's no dispute that global warming is real and measurable: Scientists aren't debating whether the tree grows up or down, if you

will, but rather the structure of its leaves and roots.

Besides this copyediting, there's been zero action on this slow-motion disaster. We're disengaged from international pacts and about to enact a new energy bill that deepens reliance on fossil fuels and coal to meet growing energy needs. (The only renewable source in the House version is ethanol—unless you count nukes.)

If this is mainstream thinking, architects aren't even in the water. *Architecture* surveys show that 88 percent of U.S. firms are interested in or already practicing sustainable design. By now, most architects recognize that "a portfolio of affordable technology and policy options exists" that could "completely transform [buildings] into low emitters of greenhouse gases over the next 50 years," as a new report from the Pew Center on Global Climate Change says. But long lead times for deploying new technologies and turning over building stock, it concludes, mean that "policies need to be launched now to create the impetus for change."

PLAN NOW FOR BETTER TRANSPORTATION

Another critical topic is mass transit, a term so out of fashion in political circles as to sound quaint. But architects recognize that robust transit systems can boost development plans and revitalize entire neighborhoods. The AIA's legislative committee has lobbied for a federally funded study of ways to "enhance community design through federal transportation projects"—a great idea unlikely to prevail in today's political climate.

Congress will soon reauthorize a six-year, \$295 billion transportation bill that sprinkles a few ferry terminals atop a smorgasbord of highway construction. And transportation secretary Norman Y. Mineta has been boasting about "coordinating" transit to reduce duplication and waste: a laudable goal, but it's a euphemism for service cuts. The only new program mentioned in his recent "coordination report" was for *vehicle sharing*: yes, swapping cars for trains and buses.

Straphangers everywhere can thank our nation's architects for at least keeping the idea of mass transit serving communities—among other *vital if unfashionable* social principles—alive and kicking. ■

Architecture's P/A Awards jury wants your best work. The deadline is August 26—see pages 6-7 for details.

Show more Shaw

The May issue coverage of the Shaw Center displays nine photographs of the exterior. Yes, the skin is pretty cool. But really—nine general pictures of the outside? How about a plan, a section, or detail? Does the building have an interior? How about the 325-seat theater, classrooms, or museum within? I guess this journalism-lite suggests that we should judge a book by its cover.

Anthony Poon

Los Angeles

I couldn't help noticing the similarity of the new Shaw Center entry façade to Mies' charcoal study for the Concrete Country House, one of the seminal "Five Projects" of 1923. Shaw has different materials and scale, of course, but still I think it shows how important (formally, anyway) these projects continue to be.

Carl Karas

New Orleans

A factory defect

Bernard Tschumi's "lattice" approaches, but fails to answer, the question of how the Beijing factory is being "preserved." [May 2005, page 40]. In addition, its monotheistic curtain-wall homogeneity precisely represents what is wrong with the status quo of development in China's booming cities. It overwhelms the funky eclecticism and rich hybridity of the site—those very elements that make it unique in the city—with a hyperbuilding that forms its own drama of identity. Architecture in this case could engage and add to the discourse on preservation by strategically relating to those unique elements of Factory 798 rather than simply putting them in the shadows.

It should also be noted that it was the collective efforts of local artists, business leaders, and arts students that led to the factor's stay of execution.

Guy Horton

Los Angeles

Role-model Rapson

I very much appreciated Tom Fisher's article "Ralph Rapson Rules" [March 2005, page 40]. Perhaps Rapson is the ideal model: master architect, artist, educator, industrial designer, planner, urbanist, architectural juror, and mentor to younger architects. It is remarkable, looking over his exemplary career in architecture, to see how he has unselfishly split his time among all of these realms. As a former student of Rapson's, I admire his example of courage in the face of adversity, standing up for the prerogatives of his art.

In the same issue, I also appreciated C.C. Sullivan's call to save Rapson's Tyrone Guthrie Theater in Minneapolis [page 13]—a true landmark building that should not only be saved but restored to its original design.

John P. Sheehy

San Francisco

Incremental progress

Thom Mayne rightly deserves the honors and merits he has been given, but the term "radical incrementalism" is a bit pedantic and excessively emphasized [April 2005, page 15]. The words sound as natural and normal as evolution, which has only ever been trumped by the benign voracity of its own re-evolution. Mayne might be a superior architect, but not because he is open and responsive to the dynamic influences of a context. It seems the only thing this linguistic gymnasticism achieves is an insecure expression of progress, hidden behind the semantic guise of a common shell game.

Joseph Lambert

Oakland, California

Nursing the wounds

In "Clinical Trial" [March 2005, page 52], Larry Albert notes that our firm, Patkau Architects, which won the commission for the nursing center on the basis of a design competition, "resigned after an impasse over costs." That wasn't our experience. We resigned because the university could not support its environmental objectives and a 225,000-square-foot program area with its budget. After we resigned, the school reduced the program area by 31,000 square feet and proceeded to realize the project with another firm.

John Patkau

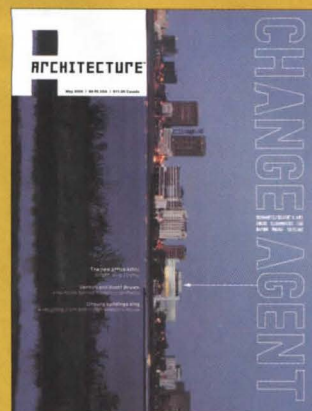
Vancouver, British Columbia

CORRECTIONS

The Home of the Year Awards entry deadline in the calendar [June 2005, page 76], should be July 15. Entries submitted to the 53rd annual P/A Awards [June 2005, pages 8-9] may only include works of architecture scheduled to be completed before January 1, 2006, not 2005 as listed. "Getting With the Entire Program," [May 2005, page 79] misidentified the graphic designer in the St. Louis office of HOK. Her name is Julie Hick. "Dark Clouds of Knowledge" [April 2005, page 52] misspelled the name of the University of Utrecht's campus architect; it is Aryan Sikkema. The 250 Rhode Island project by Pfau Architecture [May 2005, page 68] was a joint venture with Chong & Partners.

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05 | 2005 ↑



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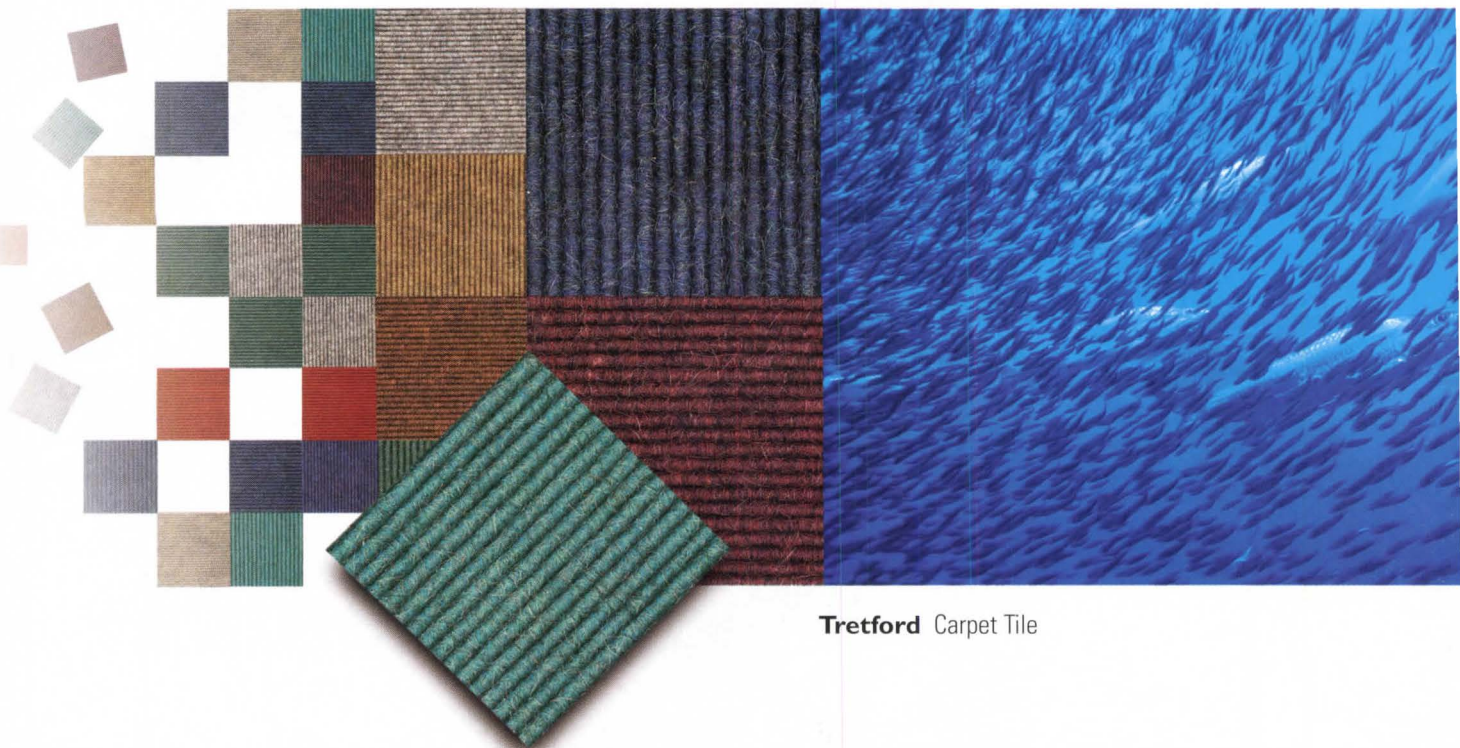
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D.C. PROJECTS STYMIED



Architecture fans in Washington, D.C., have been crying foul after two major museum additions suddenly came to a halt in the space of two weeks late this spring. The kibosh on both projects came down to project details.

In the case of Frank O. Gehry's proposed addition to the Corcoran Gallery of Art, the "technicality" was money—lots of it. The project's cost, originally put at \$60 million in 1999, had ballooned to \$120 million. When the museum's trustees suspended the project in late May, the Corcoran was still short about \$80 million.

About two weeks later, the National Capital Planning Commission (NCPC), which oversees designs affecting federal space in the district, rejected plans by the Smithsonian Institution to erect a steel-and-glass canopy by Foster and Partners over the interior courtyard of the former U.S. Patent Office building that houses the American Art Museum and the National Portrait Gallery.

Critics of the NCPC's decision called it an about-face, after the commission had tentatively approved the project in two earlier votes. But the commission's chairman, John V. Cogbill III, said he was uncomfortable with the final design. "You suddenly had this baroque dome rising over the building," Cogbill observed. The commission has asked for revisions to separate old and new construction more clearly.

Smithsonian spokeswoman Linda St. Thomas said the museum's staff is working with the [architects and the] commission to present a new design for approval, in part because the Smithsonian has already committed \$8 million to the project. "It will be modified," she said. **Bradford McKee**

NORMAN D. KURTZ, 1936-2005

Norman D. Kurtz, chairman and founding partner of New York City-based engineering firm Flack + Kurtz, died May 13. He was 69. A pioneer in integrated engineering and the sustainable building movement, Kurtz—trained as a mechanical engineer with a degree from Princeton University and an M.S. from Stanford—rose to prominence by working with architects and developers to create energy-efficient designs during the 1970s fuel crisis. His multidisciplinary firm, which merged with London-based engineering giant WSP Group in 2000, has mentored leading engineers in virtually every discipline, from M/E/P and security systems to fire protection and lighting design. Kurtz worked on major commercial projects worldwide, including The World Financial Center in New York City, Coeur Défense in Paris, and Cesar Pelli's Petronas Towers in Kuala Lumpur.

Kurtz also served as an adjunct professor of engineering at the Princeton School of Architecture, and lectured internationally. **Katie Gerfen**



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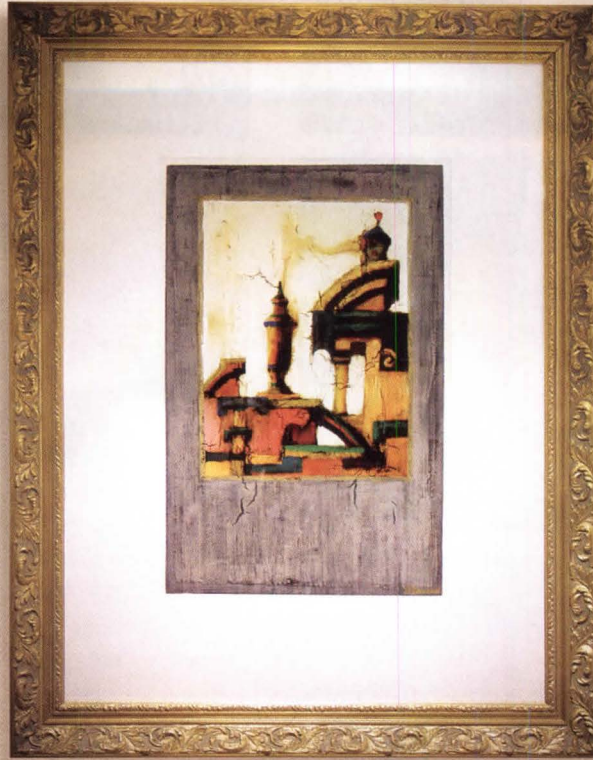
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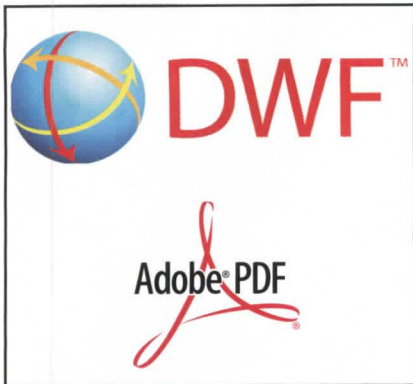


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With a purse worth billions, the market for exchanging construction-related documents is cutthroat. That explains why software heavyweights Adobe, inventor of the PDF, and Autodesk, owner of the competing but lesser-known Design Web Format, or DWF, have been fighting for the hearts and hard drives of the world's architects in recent months, with new program features, ad campaigns, and road shows.

Dominant in A/E/C computing, Autodesk plays an unlikely David to the Goliath, Adobe, which has dispensed 500 million copies of its PDF "Reader."

Distribution notwithstanding, the similarities between PDF and DWF are striking. Both are free, secure applications about a decade old, but aimed at the construction market only in the last two years. Both companies now focus on "project workflow," but where Autodesk positions DWF as better for CAD output, Adobe touts its near-ubiquity as critical for non-CAD users.

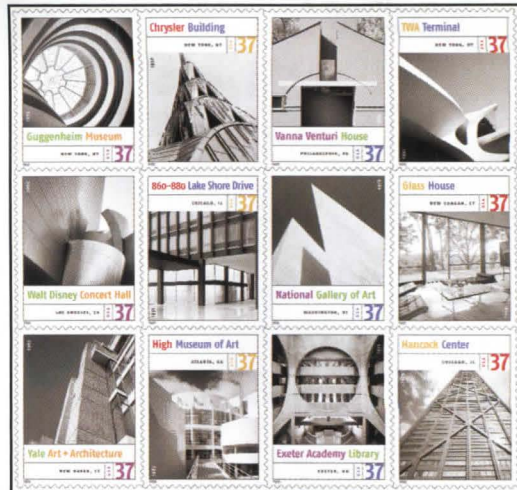
"Architects share documents with people outside this marketplace, so they need something everybody has access to," fires off Patrick Aragon, a former Bechtel engineer now leading Adobe's A/E/C efforts.

"The big difference is when you publish a DWF out of a design app, it's prepared properly," counters Jonathan Knowles, a former Adobe executive who stunned the computing world earlier this year by bolting to head up Autodesk's DWF initiative.

"DWF has been around for a long time, but we integrate with older versions of AutoCAD," Aragon jabs.

Knowles counters: "I wouldn't fly in an airplane that was designed from a PDF." **C.C. Sullivan**

On May 19, the United States Postal Service officially released a new series of 12 stamps called "Masterworks of Modern American Architecture." The series features a diverse selection of landmark buildings, dating from 1930 to 2003. One criticism expressed by architects at the AIA convention in Las Vegas, where the collection was dedicated, is that nowhere on the stamps are the architects' names or project completion dates listed. So



as a public service, the following are the credits for the buildings displayed: Frank Lloyd Wright's Guggenheim Museum (1959), William Van Alen's Chrysler Building (1930), and Eero Saarinen's TWA Terminal (1962) in New York City; I.M. Pei's National Gallery of Art (1978), Washington, D.C.; Skidmore, Owings & Merrill's Hancock Center (1970) and Ludwig Mies van der Rohe's 860-880 Lakeshore Drive apartments (1951) in Chicago; Philip Johnson's Glass House of New Canaan, Connecticut (1949); Robert Venturi's Vanna Venturi House in Philadelphia (1964); Paul Rudolph's Yale Art and Architecture Building (1963) in New Haven, Connecticut; Richard Meier's High Museum of Art, Atlanta (1983); Louis I. Kahn's Exeter Academy Library in Exeter, New Hampshire; and Frank O. Gehry's Walt Disney Concert Hall (2003) in Los Angeles.

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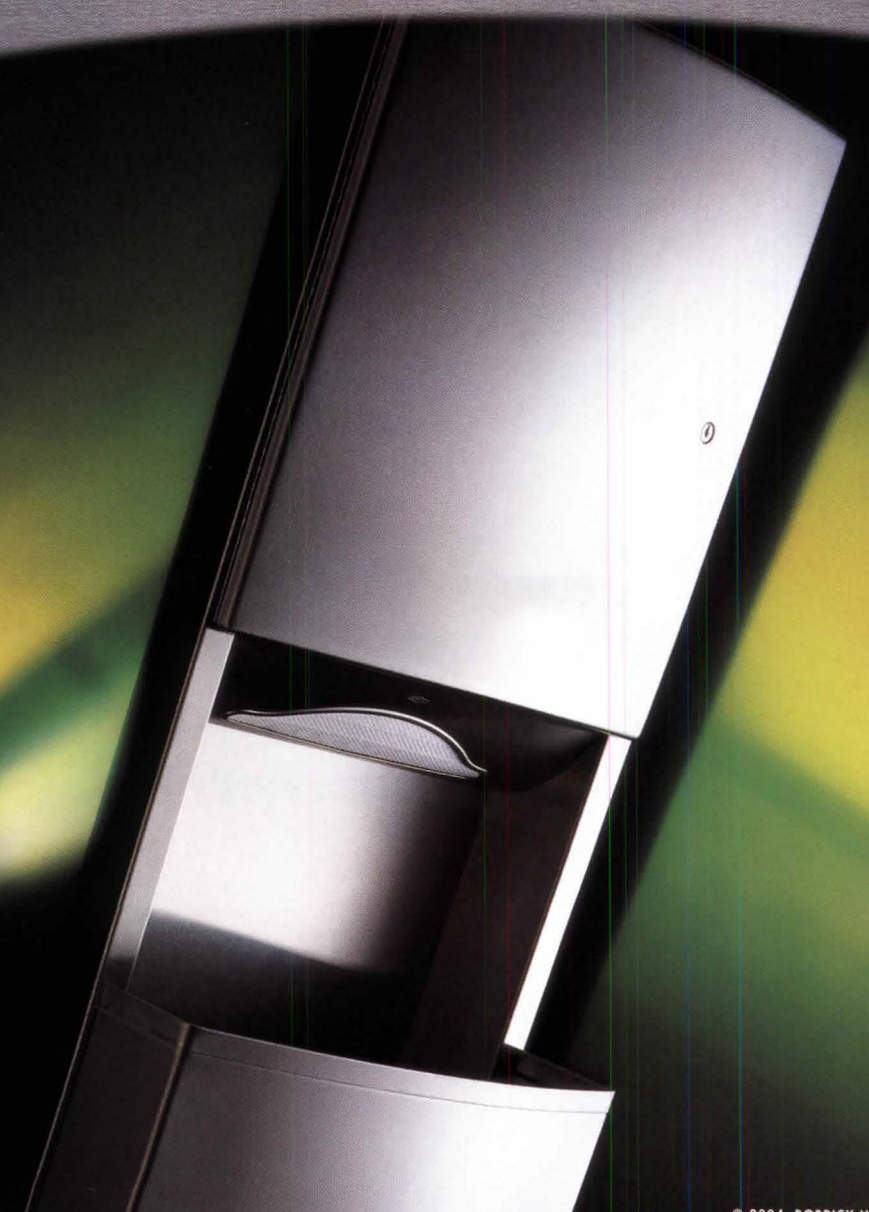
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HOME DEPOT GIVES LEED A HAND

The Home Depot Foundation has awarded a \$375,000 grant to the U.S. Green Building Council (USGBC) for the development of its LEED for Homes (LEED-H) rating system. The foundation—a two-year-old charitable nonprofit funded by The Home Depot company and its suppliers—supports initiatives to develop housing that is both affordable and environmentally sustainable; together with the USGBC, the foundation seeks to champion its dual agenda through LEED-H.

Grant money will go toward developing tools and a manual to help implement LEED-H, providing subsidies to aid affordable-housing producers with verification and certification costs, and funding pilot demonstrations to test the program's criteria. In addition, the foundation will be present at the USGBC's annual GreenBuild conference—to be held this November in Atlanta—to work on LEED-H training sessions and to present its inaugural "Home Depot Foundation Awards of Excellence in Affordable Housing Built Responsibly."

"Affordable housing proponents and people involved in green building are both very passionate, and what's really amazing is combining these two passions," attests James B. Hackler, the LEED-H program manager. He adds, "I really believe that it's the affordable housing community that will show that you can [apply sustainable practices] at any price point."
Anna Holtzman

⇒ The Art Institute of Chicago has appointed the San Francisco Museum of Modern Art's Joseph Rosa to be its new curator of architecture and design. He fills the void left by John Zukowsky, after his resignation in 2004.

⇒ Two first prizes were awarded in the San Francisco AIA's competition to design affordable housing on a section of Octavia Boulevard, which suffered extensive damage during the 1989 Loma Prieta earthquake: Amit C. Patel of Dorchester, Massachusetts, and the team from Oakland's Envelope A+D.

HISTORIC SITES IN IRAQ, CUBA, AND BOSTON AT RISK

Apparently June is the month for midyear resolutions in the preservation world. The World Monuments Fund (WMF) announced its list of the 100 most endangered international sites last month, the 2006 "World Monuments Watch" and the National Trust for Historic Preservation came out with its 2005 list of "America's 11 Most Endangered Places." For the first time in its 10 year history, the WMF list includes an entire country as a site at risk: Iraq. With this strong statement, the fund hopes to bring attention to what it says are many significant archaeological and architectural sites that remain in jeopardy due to the country's protracted war with Iran and the current conflict.

This most recent WMF watch list also includes Edward Durell Stone's 1964 2 Columbus Circle in New York City. The building is at the center of intense debate, as its future occupant, the Museum of Arts and Design, seeks to significantly alter the original façade and distinctive base of lollipop columns. A preservation hotspot for the past several years, the building made the National Trust's list in 2003.

This year, the National Trust has earmarked a grouping of historic Catholic churches that are currently for sale in Greater Boston, with the recommendation that the archdiocese ensure that appropriate new uses be found for them. In Cuba, the nonprofit called out Ernest Hemingway's home, Finca Vigia, as a preservation emergency. Since this home also made the WMF list, observers hope that the double billing will garner the building the protection that it needs. **Bay Brown**



Paver Quiz

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GUNNAR BIRKERTS'S ORGANIC LIFESTYLE

Branded a heretic early in his career, Gunnar Birkerts has held fast to his methods and mindset for 50 years. His restless form-making, on the other hand, continues to evolve. Interview by Martin Schwartz

This year marks several milestones for Gunnar Birkerts, the least of which might be the accomplished architect's 80th birthday. It was exactly four decades ago that this "architectural innovator and maverick" burst onto the scene, bringing with him "ideas that definitely do not run in the main channels of architectural thinking," as one of this magazine's predecessors, *Progressive Architecture*, described him at that time. Ten years later, Birkerts the "experimenter" and the "heretic," as he was variously labeled back then, earned the 1975 AIA Gold Medal and a Rome Prize, giving institutional validation to his unique approach and stylistically diverse buildings.

Yet Birkerts never rested on those laurels, and he remains an active, pioneering designer to this moment, producing works both large and small. He recently returned from the dedication of a chapel in Adrian, Michigan, and from a trip to his birthplace of Riga, Latvia, where his monumental National Library—on the boards since 1989—has finally begun sitework (page 23).

The recent projects attest to the philosophical consistency of Birkerts's 40-plus years of solo practice. Each of his built works presents a different facet of his unusual design process, which he terms "organic synthesis": a highly integrated, highly visceral response to context and site as well as program, technology, and cultural conditions (see "An Organic Method," page 24). His approach continues to offer lessons, especially in today's climate of "look-at-me" architectural design, as Birkerts has criticized recent tendencies.

Of course, no architect emerges from a vacuum, and Birkerts's work with Eero Saarinen in the mid-1950s proved formative. He had only arrived in the United States in 1949, after studies at the Technische Hochschule in Stuttgart, and he then practiced briefly with Perkins+Will in Chicago. Later, after several years with Minoru Yamasaki, in 1959 Birkerts established his own practice in Birmingham, Michigan, and began a long teaching career at the University of Michigan.

After so many years of assisting noted architects and authoring numerous distinguished buildings in the United States and abroad, Birkerts's career enters a new phase this fall: He will close his Michigan office and move to Wellesley, Massachusetts, and continue to work, as he has recently, in association with other firms. Architect and author Martin Schwartz recently spoke with Birkerts about his accomplishments and recent efforts.

How do you go about designing a building?

GUNNAR BIRKERTS: I create in a certain way. I call it organic synthesis, by which I mean that I consider absolutely everything, including the client and its personality and so on. I synthesize every aspect I can. When the conceptual combustion comes, everything's been considered, therefore my projects very seldom run aground.

My personality isn't there [in the design]; it's only there in the methodology. It's only in the way I put things together. I don't have my "personal expression," so to speak, that has

1965-1967
LINCOLN ELEMENTARY SCHOOL
COLUMBUS, INDIANA



1965

1967
TOUGALOO COLLEGE LIBRARY
TOUGALOO, MISSISSIPPI

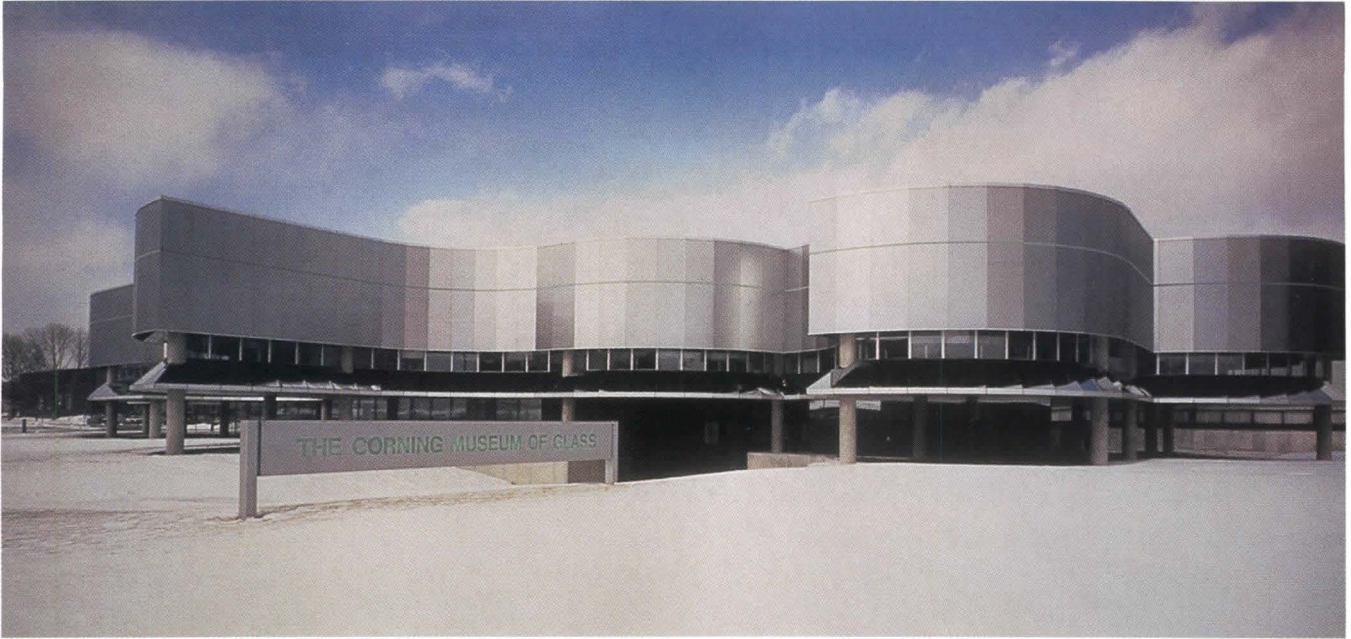


1969
DULUTH PUBLIC LIBRARY
DULUTH, MINNESOTA

1970

1970-1972
CONTEMPORARY ARTS MUSEUM
HOUSTON
HOUSTON, TEXAS





By the time that Birkerts conceived the Corning Museum of Glass while architect-in-residence at the American Academy in Rome, his unclassifiable formal style had gained wide prominence. Meant to suggest both molten and solidified glass, the building featured the first use of patterned glass with a stainless-steel coating on the back.

been carried over from project to project. When we talk about architecture today, there's so much that is personal in it, so much "look at me" and all that. The type of synthesis that I do would never produce what's being produced today even with what I know and whatever the technology is.

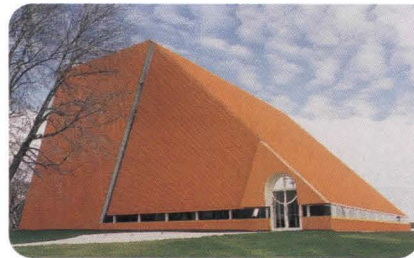
Yet the expressiveness of your forms—and their variety—suggest some kinship to current modes of designing.

BIRKERTS: In my practice there have been phases. There was

an early phase when form was justified on a philosophical basis. The Corning Museum of Glass was a metaphor for glass. At the Corning Municipal Fire Station, the arrangement of the fire trucks and their increasing lengths gave the triangular form. The Duluth Public Library was a symbolic allusion to the ore boats in the lake and the payload was the books. So, form was always expressive. Expressive form is what I'm really trying to do. Even the Federal Reserve Bank in



1974-1981
LAW SCHOOL
LIBRARY ADDITION
UNIVERSITY OF MICHIGAN,
ANN ARBOR, MICHIGAN



1977-1979
CALVARY BAPTIST
CHURCH OF DETROIT
DETROIT

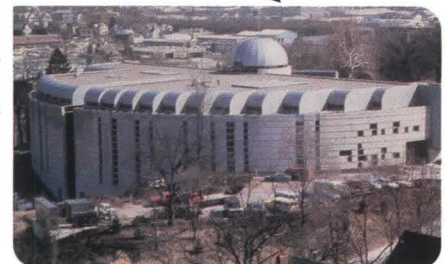
1975

1980

1976
CORNING MUSEUM OF GLASS
CORNING, NEW YORK



1979-1986
COLLEGE OF LAW
UNIVERSITY OF IOWA,
IOWA CITY, IOWA





While Birkerts says he carries no style from one project to the next, in large planning projects such as the Vocational Technical Institute (1967) and Tougaloo College (1965, above), he explored a similar, highly linear approach.

Minneapolis has a philosophy about it: It's more about the technical achievement or the structural achievement. But there's also a philosophy about it in the choice of materials, in the strength of the form, and in its orientation.

What most prominently affects your design process?

BIRKERTS: There are the forces that come from exterior and there are forces that are interior, two different considerations, and we've had to adapt to the line between the interior and exterior forces, and that becomes the form, the shape of the building. And that's how I started moving away from geometric form and I started getting into organic form. Of course, I have a great love for Alvar Aalto, in particular, because he is an organic architect, but one who is appropri-

ate, who was doing regional buildings that fit the country, fit the economy, fit the materials that they produce, and the production methods.

One of the things that distinguishes your career is that you don't do the same building over and over again.

BIRKERTS: That is true. And it is not that I'm frivolous about that. Buildings are different because every site is different, every city is different, every exposure is different. Everything's different. There's nothing that would create the same building.

Working in Saarinen's office must have had a powerful effect on your approach.

BIRKERTS: Saarinen has been rediscovered recently, but he was forgotten for many years. And the reason is, I think, that



1980-1981
FERGUSON RESIDENCE
KALAMAZOO, MICHIGAN



1991-1994
KEMPER MUSEUM OF CONTEMPORARY ART
KANSAS CITY, MISSOURI



1988-1993
LAW SCHOOL
OHIO STATE UNIVERSITY, COLUMBUS, OHIO



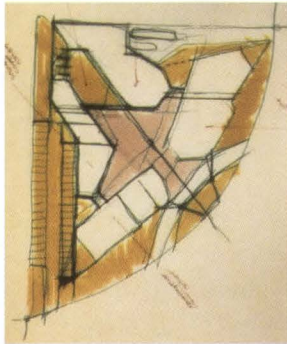
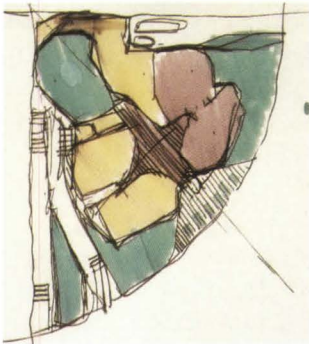
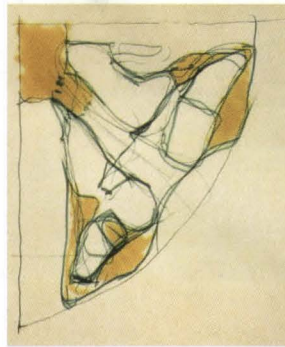
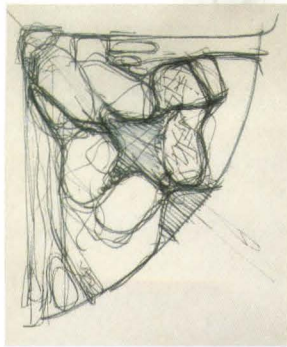
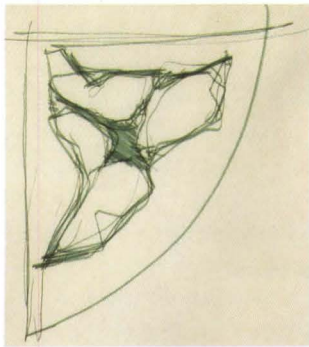
2002
CITY/UNIVERSITY LIBRARY
SAN JOSE, CALIFORNIA

1980

1985

1990

2000



"Organic synthesis" is best understood by looking at Birkerts's own process sketches. For the Kemper Museum (1991), an exploration of functional spaces seems to push the concept form's contours.

critics did not know where to place him, how to evaluate him, as he did buildings that had no singular style. This is because he took everything from zero—he started from scratch. Every building was new; every building had to surpass, in his mind, the previous one. And that's what I liked about him.

I did not agree with his methodology, but I liked his personality and his attitude, in terms of discovery: never give up and try again and again. And, yes, at that time [in Saarinen's office] I had around me Robert Venturi, Kevin Roche, and later on Cesar Pelli. There was Anthony Lumsden and Charles Bassett, and John Dinkeloo put it all together in terms of building technology, and Warren Platner was doing interiors. The people were from all over, so it was a very good group. It was

like a basket of cobras, because it was highly competitive.

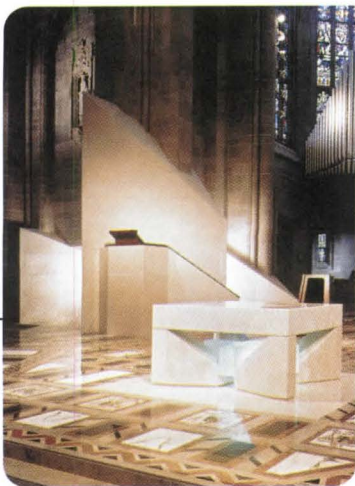
Was it competitive in a good way?

BIRKERTS: Yes, in trying to do the best and to get Eero's eye, and that sort of thing. The whole office had a very inventive spirit. Actually it was a great experience there.

Another special aspect of your career was your opportunity to build below ground.

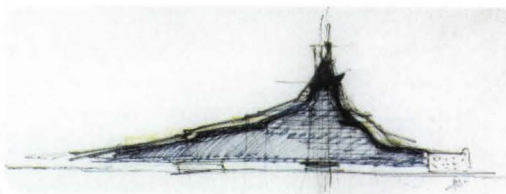
BIRKERTS: Oh, that was one more phase: I did five or six underground buildings and there was no big interest in them among the [design] publications—except for the University of Michigan Law School library—because there's no postmodernism underground, right? When you are underground you have real architecture, you know, because there's no fooling

BOTTOM LEFT: BALTHAZAR KRIBAL; BOTTOM RIGHT: DAVID HEIMT/ANNE GARRISON

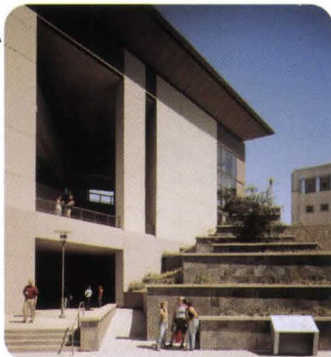


2003
CATHEDRAL OF THE MOST BLESSED SACRAMENT
DETROIT

1989-2008 (EST.)
LATVIAN NATIONAL LIBRARY
RIGA, LATVIA



2005



2003
KELLOGG LIBRARY
CALIFORNIA STATE UNIVERSITY SAN MARCOS,
SAN MARCOS, CALIFORNIA

ORGANIC METHOD, NOT MASSES

I used to say I was creating organic architecture, but I realized that was misleading. My forms don't necessarily emulate nature; my buildings don't look like mushrooms, seashells, or snails. It is my method that is organic.

I use the process of organic synthesis to bring together all the factors to be considered in the conceptualization of an appropriate solution expressive of our times.

To simplify, let me say that there are certain forces working on the architectural form. There are inner pressures that give spatial or volumetric expression, and there are outside pressures such as the context of the region, the terrain, vegetation, climate, and orientation in terms of heat gain and light direction. Budget is a big factor along with the availability of various technologies. And to the list must be added the clients' needs and what they feel the building ought to express.

A main ingredient in the process is recognition of the zeitgeist, or spirit of the age. This factor is the most difficult to synthesize because of its constantly changing nature. It is also the factor that calls for the most moderation, assimilation, or adaptation by the architect.

The architectural mind synthesizes all of these ingredients into a building concept. That is why the background of the synthesizer—ethnic, educational, and genetic background—is so important to organic synthesis.

Once you are totally aware of all the factors, it's as if you can draw a line between the pressures that come from the inside and those that come from the outside. Suddenly a line forms that is doing something very interesting. It is the outline of the building form.

Reprinted with permission from *Process and Expression in Architectural Form* by Gunnar Birkerts (University of Oklahoma Press, Norman, 1994).

around. It's space. Light and structure. It doesn't have the doodads that make it good for publication.

The amount and quality of light at the law school, even underground, is extraordinary.

BIRKERTS: It is, and that is reflected light. I come from the north, you know, where light is not very plentiful. And so I have an intuitive feel about light. I know how to take it in, reflect it, deflect it, and all that. In northern Europe, clouds diffuse light and even if there are no clouds, somehow there's enough substance in the air to diffuse light back.

And you have glare—glare is the enemy. I've just finished a building now for a group of nuns in Adrian, Michigan. It's a chapel in a circle and there's light all around. And I wanted to bring the head of the window down. I said, "This is the kind of space where you don't want to be blasted by light. You want the light symbolically coming in."

Another current project is the National Library in Riga, Latvia, which you've been working on for a long time.

BIRKERTS: I started in 1989. I just went there last month and

got the final marching orders. An interesting thing, the design has not aged over these years. It has stayed the same and, as far as I'm concerned, I would do it the same way today. It is a synthesis of many things: It is the verticality of the birch tree; it is the Teutonic castles that were built by Latvia's invaders. It is what remains of the Latvians' wooden fortresses, which they built on raised mounds to defend themselves; the fortresses are gone but the mounds remain. And it is from literature, from the "glass mountain" in a Latvian folk tale called *The Golden Horse* where these rescuers on horseback tried to reach a princess who was up on top.

The Latvians look at the building design and they understand it; you don't have to explain it. It is a metaphor they understand, although it is not very explicit. And the other thing is this: The building cannot be transported to somewhere else, because it really belongs here. We couldn't put it in Dubai.

More recently you've been working as a consulting designer with an architect of record. Can you describe the process? What are the advantages?

BIRKERTS: It started a few years ago with two lavish libraries in San Jose and San Marcos we did with Carrier Johnson, and I've had to work on the National Library in Latvia that way. And we did the Cathedral of the Most Blessed Sacrament in Detroit with DiClemente Siegel Design.

Working as designer with an architect of record allows me to work from my studio or from Wellesley [Massachusetts], where I will be moving soon. I can get drawings on my e-mail, print them out, and mark them up. And the main advantage is that I don't have to worry about administration.

My original firm was not set up with a business manager and a promotional arm and all that. We never promoted our work. What has changed in the profession is RFPs; you know, making those brochures over and over again. They all look alike. I don't know how you tell the difference between one firm and another. It has become universal in terms of what you show and how you present it. Maybe the medium is what makes it so impersonal. Slides are now on PowerPoint. The medium homogenizes everybody's work.

Much of your life's work has been as a mentor. What did you gain from your experience as a professor of architecture at the University of Michigan?

BIRKERTS: I made certain requests for an honors studio: that I would have the students for at least two semesters, because the first semester just goes to becoming familiar with each other. I wanted to work side by side with the students, and discuss things on the same level. The second request was the creative part: I did not demand finished drawings from them because what's important is the idea and the process. I had some good students—young, unspoiled minds.

What did you learn from the students?

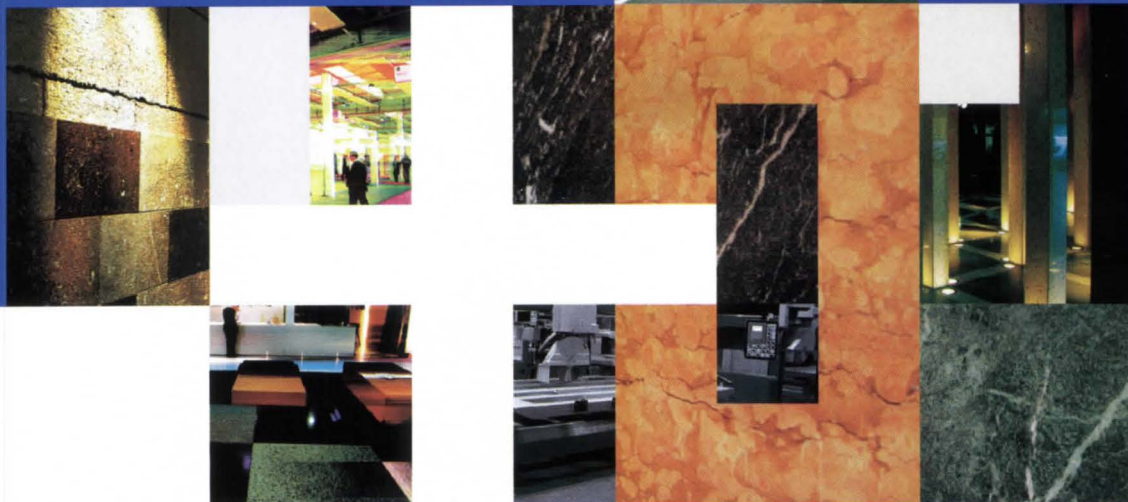
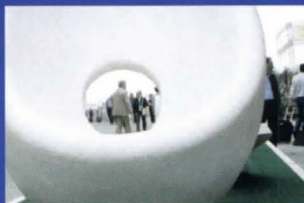
BIRKERTS: I guess I drew more from their spirit than from their ideas, more from the attitudes and from the youthfulness of the students—and their eagerness. Also when I saw results, when somebody just opened up and found himself or herself, then that's a reward. There is this discovery of oneself that, "Yes, I can do it." And then you know that you helped someone to get to that point. That's what I like. ■



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THE GREEN GIANT

A long-awaited LEED standard for existing buildings makes a debut, and a debate. by Robert Klara

The nineteenth-century Russian novelist Turgenev once observed, "However much you knock at nature's door, she will never answer you in comprehensible words." Today, some might wonder if he wasn't foretelling the process of LEED certification.

Never mind that a lengthy, often labyrinthine task has awaited those building owners questing for the LEED (Leadership in Energy and Environmental Design) stamp of approval from the Washington, D.C.-based U.S. Green Building Council (USGBC); since the rating system's founding in 1993, most buildings haven't even been qualified to sign up. Ironically enough, that's because the country's most recognized standard for environmentally responsible buildings didn't apply to the overwhelming majority of them—ones that were already standing.

That changed late last year when, after much anticipation, the USGBC unveiled its newest rating system, LEED-EB, for existing buildings. Since then, 99 buildings have joined the program, and the first five certifications were granted late last year. Some 20 more are in the final phases.

"This system addresses the existing commercial market, and not just those buildings that are at least two years old, but all buildings," says Tom Hicks, the LEED-EB program manager. "There may be buildings out there that may have already been operating sustainably and have not played the LEED game, but with a few changes and a few new technologies, they could be certified."

"This is the standard that really counts," adds Nadav Malin, the editor of *Environmental Building News* who also serves as cochair of the materials and resources technical advisory group for LEED. "It's the only one that looks at actual performance as opposed to designed performance. So, when you look at the benefits, everything else in LEED is about promises and intent, but EB is where design, construction, and operations come together to achieve good performance."

WITH ACRONYM, ACRIMONY

While many in the building community are quick to laud the new guidelines as well intentioned and, of course, beneficial to the planet, there's also been some growling in the forest. The new guidelines, say some, can be very difficult to satisfy, and even appear to run counter to certain provisions in established LEED programs.

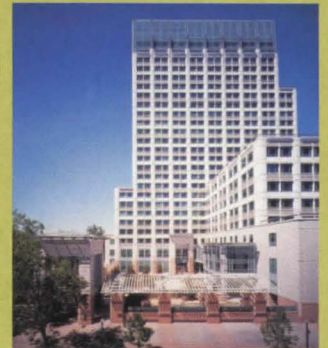
"They didn't think this one through," grouses Jim Benya, founder of Portland, Oregon's Benya Lighting Design. He's referring to the incongruity that some mercury-containing lamps that would get a nod from LEED in new building construction would run afoul of the EB standards for containing

the very mercury that makes them so energy efficient. "In order to meet the requirements for mercury content, building owners are going to have to replace otherwise good lighting with fluorescent lighting systems, and this runs contrary to everything we've been learning."

Benya adamantly affirms his support for LEED, but his gripes don't end here. He also takes issue with LEED-EB's dark-sky provisions, saying that the program's directors "don't understand that cities have different lighting requirements than strip malls." And he considers the recordkeeping required by LEED-EB to be "an administrative nightmare. Asking a building to keep records of every light

LEAN AND GREEN AT CAL/EPA

The 950,000-square-foot Cal/EPA Headquarters building was already LEED certified when it was built in 2000, but by implementing a number of operational procedures, the building's management was not only able to obtain platinum certification under LEED-EB but they also reduced operating costs by an average of \$1 million a year. The table shows where Cal/EPA identified initiatives to cut costs and improve its environmental profiles, and how its new operating expenses compare with those of similar buildings in the Sacramento area.



OPERATIONS CATEGORY

COST (PER SQUARE FOOT)

	CAL/EPA	SIMILAR BLDGS.
WASTE REMOVAL Reduced pickup; composting; credit for white-paper recycling	\$.00	\$.05
CLEANING SUPPLIES Replaced 40 chemicals with just three, all nontoxic and biodegradable	.05	.14
ELECTRICITY High-efficiency fixtures; lamp voltage reduction; reduction of nighttime lighting	.99	1.59
AIR FILTERS Low-cost, replaceable units	.03	.06
WATER Waterless urinals; drought-tolerant plants	.02	.06
LANDSCAPE Wild grasses that need no mowing	.05	.09
TOTAL	\$1.14	\$1.99

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bulb in the building is impossible.”

EB program manager Tom Hicks defends the record-keeping requirements by pointing out that not all of them are onerous—“Waste-disposal costs are easy to document,” he says—and that LEED requires such record keeping in order to establish standards and measure progress. “Once you can get that information out to the public,” he says, “it can form a future vision.”

Malin, too, says applicants should remember that the difficult initial steps pay off over the long term. “EB requires facilities managers to do data collection and reporting,” he says. “But that’s not a bad thing. Once they have the system up, it can become a useful tool.”

It has been for the owners of the Cal/EPA Headquarters building, a high-rise in Sacramento. Completed in 2000 by AC Martin Partners, the 25-story, 950,000-square-foot building was already equipped with various eco-friendly technologies, but owner Thomas Properties Group implemented an aggressive green operating program (see “Lean and Green,” page 27), and used the documented results to obtain its platinum rating. “It’s a rigorous application process, no question,” says Randall Scott, Thomas Properties’ executive vice president. “But it’s very justifiable in our view. We’ve saved a million dollars in costs.” ■

APPRECIATING THE GREENERY

In a nutshell, a LEED-certified building is one that was built in, and operates in, a manner that’s kind to the environment. A big blanket covers this concept that includes everything from installing low-wattage exit signs to locating the building close to public transportation. The key difference between LEED-EB, the new rating for existing buildings, and the other classifications is that EB focuses on **operation rather than construction** or renovation (which are addressed by LEED-NC, for new construction, and LEED-CI, for new commercial interiors, respectively). Instead of granting points for design or component choices, EB certifies how a building is actually run—including such things as waste management, temperature monitoring, and lighting performance.

Similar to the established LEED standards, LEED-EB offers **grades of approval**—certified, silver, gold, and platinum—based on the accumulation of points. (It takes 32 points to be certified, and anything over 64 wins platinum.) An existing building applying for approval can win two points for storm-water management, one point for providing bicycle storage, and up to 10 for optimizing energy performance, for example. ■

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Images, Private residence by architect Hugh Newell Jacobson in Washington, DC.



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WHO'S THE BOSS?

Not content to let clients hold all the cards, maverick firms are generating their own projects. by Anna Holtzman

While architecture is sometimes associated with the high-minded pursuits of knowledge, beauty, and the betterment of society, more often, architect and theoretician Paul Nakazawa bluntly points out, practitioners act as though they're merely "in the service business." The only questions they seek answers to are those posed by their clients, argues Nakazawa, who prompts his students at the Harvard Design School and the Southern California Institute of Architecture to pursue deeper modes of engagement. There are myriad ways, he maintains, in which architects can take their professional destiny—and social responsibility—back into their own hands.

Recent initiatives by a handful of maverick practices give credence to Nakazawa's theory. Their motives range from altruistic to economic, but the word that comes up most often in speaking with these small firms is "integrity"—whether it be maintaining personal design convictions or effecting large-scale urban change.

THE ALTRUIST

With just such a proactive attitude, San Francisco-based architect John Peterson founded Public Architecture two and a half years ago as a nonprofit arm of his boutique firm, Peterson Architects.

"Initially, we were looking for other stuff to do to get inspired," he recalls. "I considered doing competitions, but I figured I'd have roughly the same slim odds of winning one as I would of getting funding for a project of my own device." Instead, he set about creating a proposal to layer sporadic oases of green space into the industrial South of Market neighborhood where he works. Small phased interventions—a lawn strip here, a dog run there—made the project financially feasible. Plus, his firm's associates would contribute the labor themselves.

Starting with an informal conversation with a local planner, Peterson eventually presented the project to the city, gaining its approval—but not financial support. Then, a neighboring business owner who saw Peterson's plans agreed not only to allow a small park to be installed adjacent

to his café, but also to pay for its construction. "Realistically," says Peterson, "it will probably be a five-to-ten-year schedule for the parks project"—a long road with no tangible financial reward. His immediate gratification, however, is direct engagement with his community.

THE ENTREPRENEUR

Another way to go for many small firms is the for-profit route. "We had been doing a lot of commercial work—clubs, bars—and we wanted to do a residential project," says Mehdi Rafaty of the six-person Los Angeles firm Tagfront. However, he and partner Mandi Rafaty were not interested in designing



To help shape its community, San Francisco's Public Architecture has proposed urban interventions, such as a skate park (top). Milwaukee's Vetter Denk Architects is developing residences in Green Bay, Wisconsin (above).

the derivative historicist homes that many clients were asking for. So the firm became its own developer—as well as its own contractor. After finding a suitable property in nearby Laguna Beach and drafting a proposal, Tagfront obtained an investor in the form of a past client. The 2,500-square-foot, single-family house sold before construction was complete, and so the firm decided to continue the formula—detached dwellings, most of them funded by a single financier. Their eighth sleek,

modernist residence is currently in the works. The caveat with each project is that the investor is silent—Tagfront has complete creative control—and once the buyer enters the picture, all design decisions, from structure to finishes, have already been finalized.

"It's valuable as a showcase for us," Mehdi attests. As far as the financial return on self-generated work, he hedges: "It's hard to say which type of project is more lucrative. We invest more in our own projects and we don't limit the materials. But in the end, we get back some of that money, because the client is willing to pay for it." The downside of speculative work? "It's very difficult," Mehdi warns. Not wanting to risk putting all of their eggs in one basket, the Rafatys maintain about 90 percent of their work in traditional commissions.



Before approaching the city of Green Bay, Wisconsin, with a proposed downtown masterplan, the firm Vetter Denk Architects cut its teeth on residential developments like this one in its hometown, Milwaukee.

THE JOB GENERATOR

In the world of architectural academia—which Boston-based architect Tim Love knows well—being commercially proactive is not necessarily looked upon admiringly. “My academic project is to call this into question,” he says. Having worked for Machado and Silvetti Associates, an office headed by two Harvard professors, Love became frustrated by the scholarly firm’s practice of waiting for appealing RFPs and competitions to come its way, only to lose out financially on ones that it did not garner. When he started his own practice, called Utile, he says, “I was interested in how design firms could generate opportunities rather than waiting around for them.” One way

to go about this was to follow the market, and in Boston he observed a growing demand for new housing in the city’s outlying neighborhoods. So he began to research sites for development, design housing prototypes, and then approach developers with his pitch. “We do not invest ourselves financially,” he says. “We want to ‘keep it clean’ and just be the architects.” One recently completed housing type for South Boston has a first-floor parking “plinth” with three floors of units above it. In-the-works prototypes include “shallow row housing” for an area with narrow street-to-alley dimensions.

While Love’s method offers an alternative route to new commissions, it also gives him more control over design and site



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Architect Tim Love approached developers with the concept for this 24-unit condo in South Boston with a ground-floor parking garage.

planning. In traditional projects, he explains, key decisions are often made before an architect comes on board, as developers are loath to pay for a preliminary site analysis. By doing a pre-emptive study, Love finds solutions that satisfy his own design and social concerns as well as the developer's economic ones.

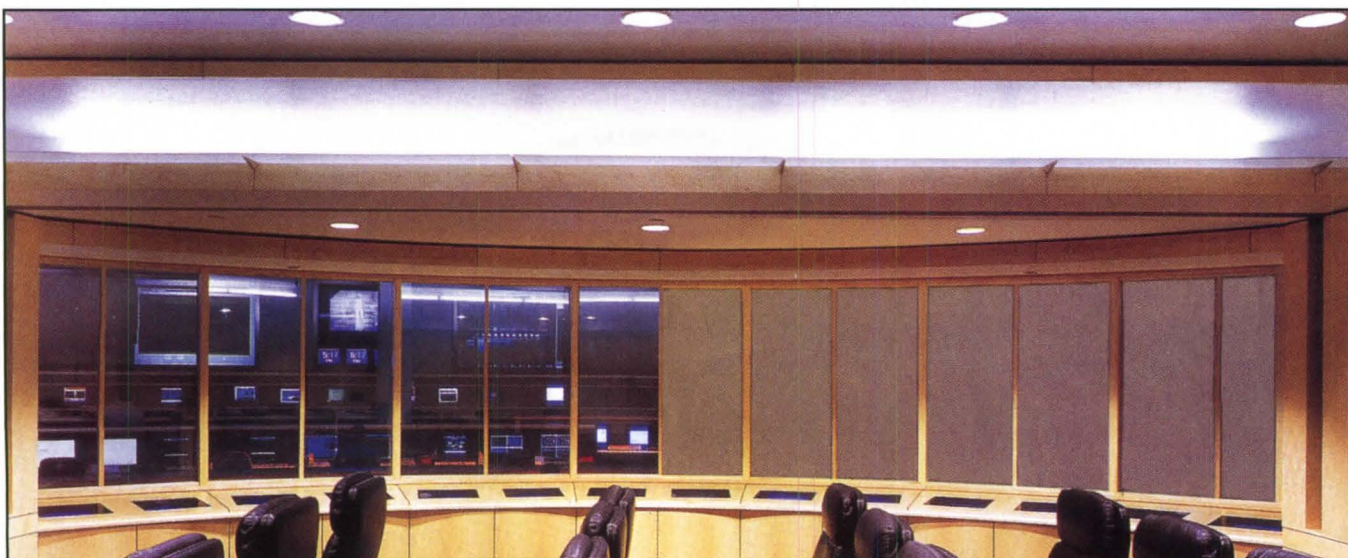
Combining commerce with architecture presents "a slippery slope to mediocrity," Love cautions. "But I don't think good design and following the market are mutually exclusive."

THE PRIVATE-SECTOR PLANNER

While housing is important, why stop there? Together with its development arm, Vetter Denk Properties, the ten-person Milwaukee-based Vetter Denk Architects is generating urban design schemes—and actually getting them built.

Having racked up a slew of successful housing developments in Milwaukee over the past six years, the firm took a research trip in 2003 to Green Bay, Wisconsin, the third largest city in the state, where they found a neglected downtown core. Inspired by the untapped potential there, Vetter Denk approached the city with a novel proposition: They would create a downtown masterplan if, in lieu of a design fee, the city would give them exclusive development rights to a four-block strip of city-owned waterfront. Green Bay took the bait, and Vetter Denk hired on Boston's StoSS Landscape Urbanism, out of pocket, to do the landscape design. The masterplan has since received approval from the city's Redevelopment Authority and the Common Council, and at present, Vetter Denk's first residential project is under construction, with two more mixed-use projects in the works. "Five years ago, this [development work] was a language that I didn't even know," relays principal John Vetter. "Now it seems like the only way to do business." These days, the firm devotes roughly three-quarters of its time to self-generated work. "If you want to do this, you really have to make it your mission statement and retool your firm," Vetter asserts. "The biggest hurdle is creating equity so that you can go forward."

And is his firm seeing financial benefits to the dual role of architect and developer? "Yes, it is more lucrative," reports Vetter. "But more so, the motivation is that we can address architectural issues more significantly, maintain more integrity, and touch more people's lives in a more profound way by acting as our own clients." ■



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THREE, TWO, ONE ... CONTRACT

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In the legalistic, arcane world of contract documents, there's not much in the way of folklore. But there is the story of a contractor down in Florida who, a few years ago, decided to draft a contract that would tilt the scales toward his firm at the expense of all the other parties involved. And how, you might wonder, did he connive the architect to sign such a chit? Easy. With the help of a little desktop publishing, he created **sham papers** that looked just like AIA documents. After all, he reasoned, the AIA's contracts are so commonly used, so unquestioned, that many signers don't even bother to read them.

Unfortunately for the contractor, the other parties did, and the story is now told as a cautionary tale in law offices. But the fact remains that, when it comes to contract documents, the AIA does rule the roost. Its papers so dominate the field that much of construction case law is drawn directly from the language of its 90 forms—some of which have origins that go back to 1888. The institute's ubiquitous A201 General Conditions form—of which the AIA sells 400,000 yearly—has been around since Taft was in the White House.

THE GANG'S ALL HERE

Yet while few dispute the dominance and essential soundness of the AIA's papers, they are not the only game in town. The past few years have given rise to a clan of **competing document families** published by five major trade groups (see "Document Shopping," page 39) including the Design-Build Institute of America and the Construction Owners Association of America (COAA). While the stated purposes of the documents are the same, each issuing group's documents differ in that, logically enough, they tend to take the point of view of the party the group represents. COAA documents, for instance, are developed with the owners in mind, says Boyd Black, the group's documents-committee chair. "The owners' interests gain the upper hand."

So why would any architect want to look beyond the AIA papers? Experts say it makes sense to know the other

players out there, especially because non-AIA documents have gained market share. What's more, some believe these documents are more concise, easier to use, and even fairer to all parties involved—increasing the chances that a job will be completed quickly and profitably with a minimum of dispute.

Many appreciate the streamlined process that the documents afford. For instance, the Associated General Contractors of America (AGC) publishes a form AGC200, which is essentially a **combined agreement and general conditions**—the equivalent of the AIA's A101 and A201 together. "Oftentimes, the parties will sign an AIA agreement form but never see the A201," says Mark McCallum, the AGC's senior counsel. "Our philosophy is, we want the prime parties to see all the terms when they sign."

AGC has simplified things, too. "We'd heard that the AIA didn't have a short form for the owner-architect-engineer agreement," McCallum adds. "So we came up with one. There's a need out there for an abbreviated set of documents that is still comprehensive."

HAVING THEIR SAY

And while the AIA Documents Committee does consult with various engineers and designer groups to develop its papers, some say those issued by other groups are better for their broader input. "We have an open, **consensus-driven process**," argues Art Schwartz, deputy executive director of the National Society of Professional Engineers, the driving force behind the Engineers Joint Contract Documents Committee (EJCDC) forms. "We welcome representatives from the insurance and legal professions, public agencies, and owners groups. We hammer out any issues in advance."

"EJCDC forms also have some benefits because they're simpler documents," adds Doug Shevelow, a contracts attorney with the Columbus, Ohio-based law firm of Bricker & Eckler. "Of course, there are areas in the EJCDC more protective of an owner than the architect. This is always a

A NEW BOOK SIZES UP THE DOCS

While many are aware that there are general differences among contract documents issued by the major building-industry groups, has anyone really sat down and compared them, clause-for-clause? Until recently, nobody either had or was willing to admit it. Now, there is the *Construction Contracts Book*, published last year by the American Bar Association (\$179.95 at www.abanet.org/abastore). For any attorney involved in design and construction—or any architect who wants a sharp nose to accompany his sharp pencil—this is required reading. In 338 concise yet exact-

ing pages, *Construction Contracts* takes documents from the AIA, the AGC, and the EJCDC and compares how each treats the most significant issues on any job—from dispute resolution to insurance to hazardous materials. It also proposes alternative language in areas where none of the standard documents fit unusual but important circumstances. The book is not, as the authors are quick to state, a substitute for informed legal counsel, but it's enough to help any architect know—especially when presented with non-AIA papers—what she's signing. ■

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Or not, if you ask Bruce D'Agostino, executive director of the Construction Management Association of America. "Our documents are neutral," he maintains. "And that's the best that can be said for the whole process."

No matter what documents get used, the AGC's McCallum surmises, architects should know the field of options. "There isn't one 'right' contract for every situation," he says. "We believe you should have a choice." **Robert Klara**

DOCUMENT SHOPPING

While the AIA currently publishes more than 90 contract documents and administrative forms that are considered construction-industry benchmarks (www.aia.org), there are several other professional building organizations that produce and sell boilerplate contracts for construction projects and design services. Some of these alternative document families have been around for several years; others are virtually brand-new to the scene. Whatever their lineage, these documents have begun to chip away at the AIA's monopoly. Here's a primer on who sells what:

Associated General Contractors of America (AGC)

This Alexandria, Virginia-based group publishes over 40 standard-form contract documents and produces a software called DocuBuilder, which allows users to amend and customize the documents. Since 2003, AGC and AIA have also jointly drafted some at-risk documents.

WWW.AGC.ORG

Engineers Joint Contracts Document Committee (EJCDC)

A collaborative effort among the American Consulting Engineers Council, the National Society of Professional Engineers, and the American Society of Civil Engineers, EJCDC publishes documents in numerous categories including construction, funding agency, and procurement. The group has created an online seminar for its documents, and will also customize a CD-ROM of desired documents.

WWW.NSPE.ORG

Construction Management Association of America (CMAA)

This organization, dedicated to the interests of program and construction management, sells a set of standard contract documents, available on CD-ROM.

WWW.CMAANET.ORG

Construction Owners Association of America (COAA)

COAA currently has three suites of documents for sale: a Contract for Professional Services (architect's form) and two Contracts for Construction (one a general contractor's fixed-price form, and the other a form for at-risk construction management with a guaranteed maximum price). Plans are underway to add more documents to the library.

WWW.COAA.ORG

Design-Build Institute of America (DBIA)

This association sells a variety of contracts and contract guides, available on disk or to download, geared specifically toward design-build projects.

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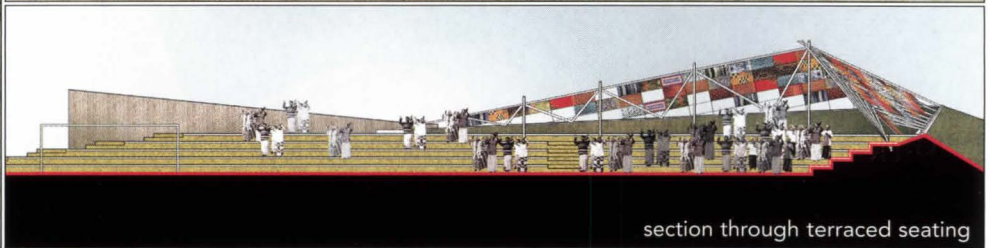
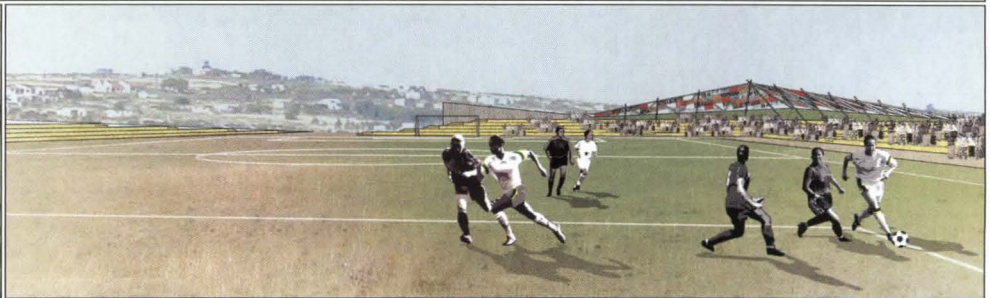
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➔ SWEE HONG NG | SIYATHEMBA SPORTS AND HIV/AIDS OUTREACH CENTER | SOMKHELE, KWAZULU-NATAL, SOUTH AFRICA

Last year, an international competition was launched to design a soccer field that would also serve as a center for HIV/AIDS outreach and education for the youth of Somkhele in KwaZulu-Natal, South Africa, a region with one of the highest HIV/AIDS rates in the world. The project—titled Siyathemba, meaning “hope” in Zulu—was organized by the group Architecture for Humanity together with South Africa’s Siyathemba Consultants, Africa Centre for Health and Population Studies, and East Coast Architects. This spring, Pittsburgh-based architect Swee Hong Ng was chosen by the locals of Somkhele from among nine finalists selected by a distinguished jury. Ng uses earth and adobe brick to create terraces that spatially define the soccer field—earmarked for use by the town’s first all-girl team—while emulating the area’s gentle hills. Two V-shaped terraced forms meet to create an amphitheater where performances and other events may be staged. For seating, the steps are paved in concrete. Shielding bystanders from the sun, a timber-framed canopy is covered with textiles made by community artisans. The project’s organizers hope that this colorful fabric will be modified and replaced over time as a visual symbol of the community’s vibrancy. Construction is scheduled to begin later this year. **Anna Holtzman**



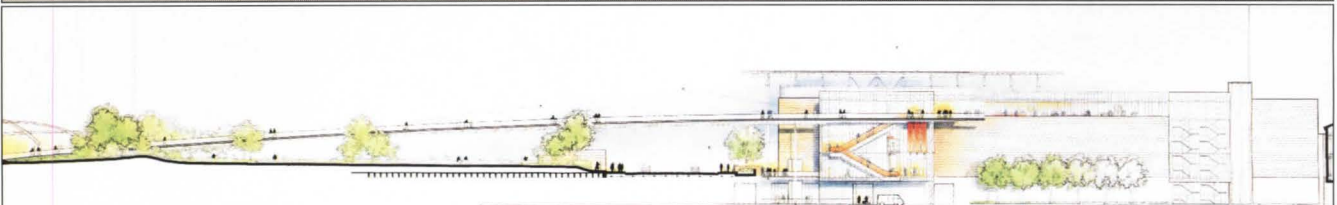
site plan



section through terraced seating

➔ RENZO PIANO BUILDING WORKSHOP | ART INSTITUTE OF CHICAGO EXPANSION | CHICAGO

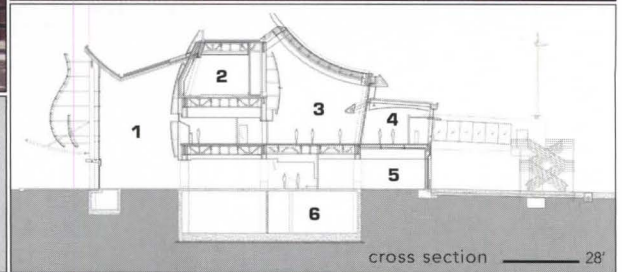
Luminous, transparent, and delicate, Renzo Piano’s design for a 264,000-square-foot expansion of the Art Institute of Chicago is the first since the beaux-arts jewel opened in 1893 that truly reflects the museum’s vast modern and contemporary holdings (see page 88). Rendered in slender metal members, large expanses of glass, and limestone cladding, the new north wing establishes an elegant, Miesian presence on a sunken site that contains the currently unused historic Goodman Theater, which will be razed. Just as significant, the building links to Millennium Park to the north—the site of Gehry Partners’ bandshell and serpentine bridge (December 2004, page 59)—by means of a 9-foot-wide, 900-foot-long footbridge that crosses Monroe Street. (While symbolically enticing as a cultural connector, the stainless-steel span is a tenuous extension of the form, and like some industrial conveyance, the incline plunks pedestrians at a sculpture terrace and restaurant far from the main entry.) Most striking is the north-south multistory “main street” inside—connecting new galleries, education facilities, and a winter garden—as well as a vast canopy of curved aluminum blades held astride the skylighted roof on thin steel posts, with deep overhangs above each façade. The \$258 million project, as yet about half funded, began construction last month. **C.C. Sullivan**



north-south section

➔ **GENSLER | NORTH CONCOURSE, NORMAN Y. MINETA AIRPORT | SAN JOSÉ, CALIFORNIA**

With over 11 million passengers passing through the gates of the Norman Y. Mineta Airport yearly, it's clear that many people do know the way to (and from) San José. But when those hoards presaged the need for a new terminal, it left the architects at Gensler with a challenge. "This was a real opportunity to design a civic symbol and icon for San José," says firm principal Steve Weindel. "But we had to ask, 'What is San José all about?'" An extensive public comment period revealed that the community wanted the new North Concourse to evoke San José's agrarian past (a valley of orange groves) and its high-tech future (a valley of silicon). Gensler's solution is a symbol for both. Traffic pulls up to a façade of gauzelike metal sails that appear to billow down the 6,000-foot length of glass-walled departure hall—a sophisticated nod to the city's high-tech economy. The 49-gate concourse, meanwhile, offers a metaphorical counterpoint by bathing travelers in light that filters through a curving, glass-baffled roof and reflects off wood paneling. "It's reminiscent of the dappled light that comes through orchards," Weindel notes. Scheduled for completion in late 2007, the North Concourse will eventually be joined by a new central terminal (also by Gensler), both intended to replace two older structures on the site. **Robert Klara**



- | | |
|-------------------|-------------------|
| 1 ticket hall | 4 gate lounge |
| 2 mechanical core | 5 baggage make-up |
| 3 concourse | 6 utilities |

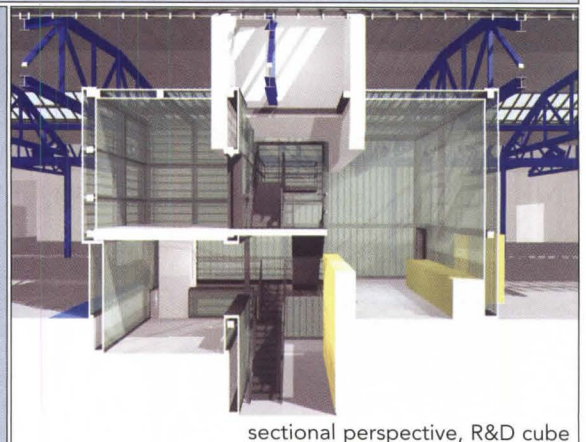
cross section ——— 28'

➔ **GARY SHOEMAKER ARCHITECTS | GREAT HARBOR DESIGN CENTER | BROOKLYN, NEW YORK**

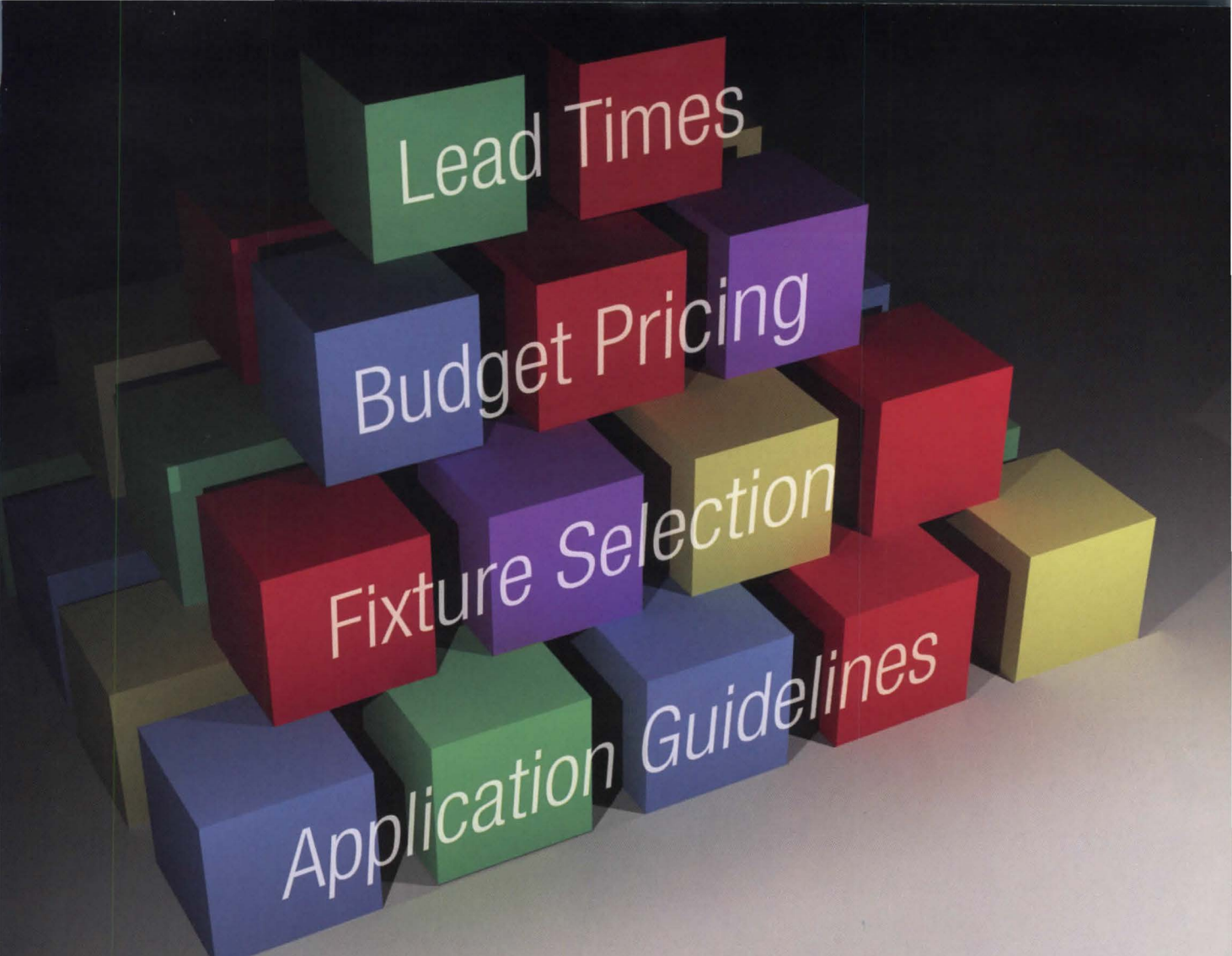
Great Harbor Design Center, a manufacturer of a recycled-glass-and-concrete interior surfacing material, is poised to take up residence next year in the Brooklyn Navy Yard, an industrial quarter on the site of a former shipbuilding plant. While undertaking much of the construction work in-house on this gut renovation, the company called on a Manhattan-based architect to create a sense of "industrial theater," using materials such as steel grating and mullions, clear and frosted channel glass, and gypsum board. The \$1.8 million scheme encompasses an 11,000-square-foot portion of a 52,000-square-foot, former ship-assembly building, including "the pit," a 24-foot-by-36-foot concrete depression with two levels below ground. The design organizes the program into two channel-glass-encased cubes: a research-and-development facility, which includes the pit, equipped for research into glass coloration and matrix additives, among other materials and production processes; and a family center housing an employee café, gym, locker room, and sauna. With more than 200 neighboring businesses, the Navy Yard provides easy access to the discarded glass that forms the core of the center's products. **Anna Holtzman**



perspective of family center and R&D cube



sectional perspective, R&D cube



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Architects: Yoshio Taniguchi and Associates and Kohn Pedersen Fox Associates

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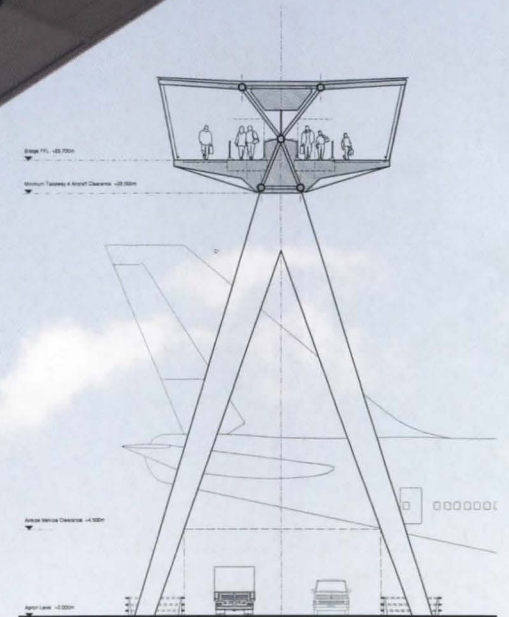
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SOLAR CONTROL

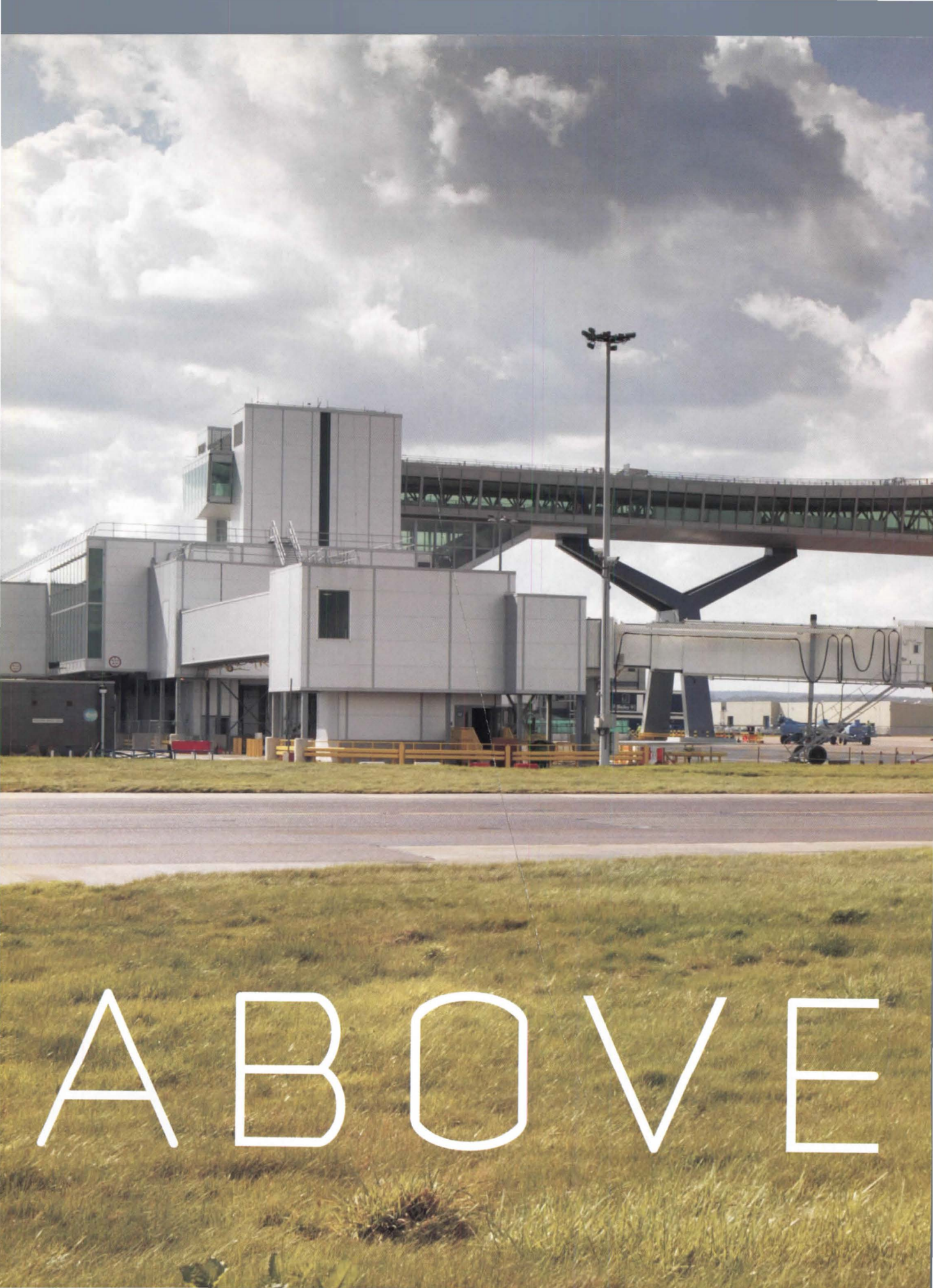
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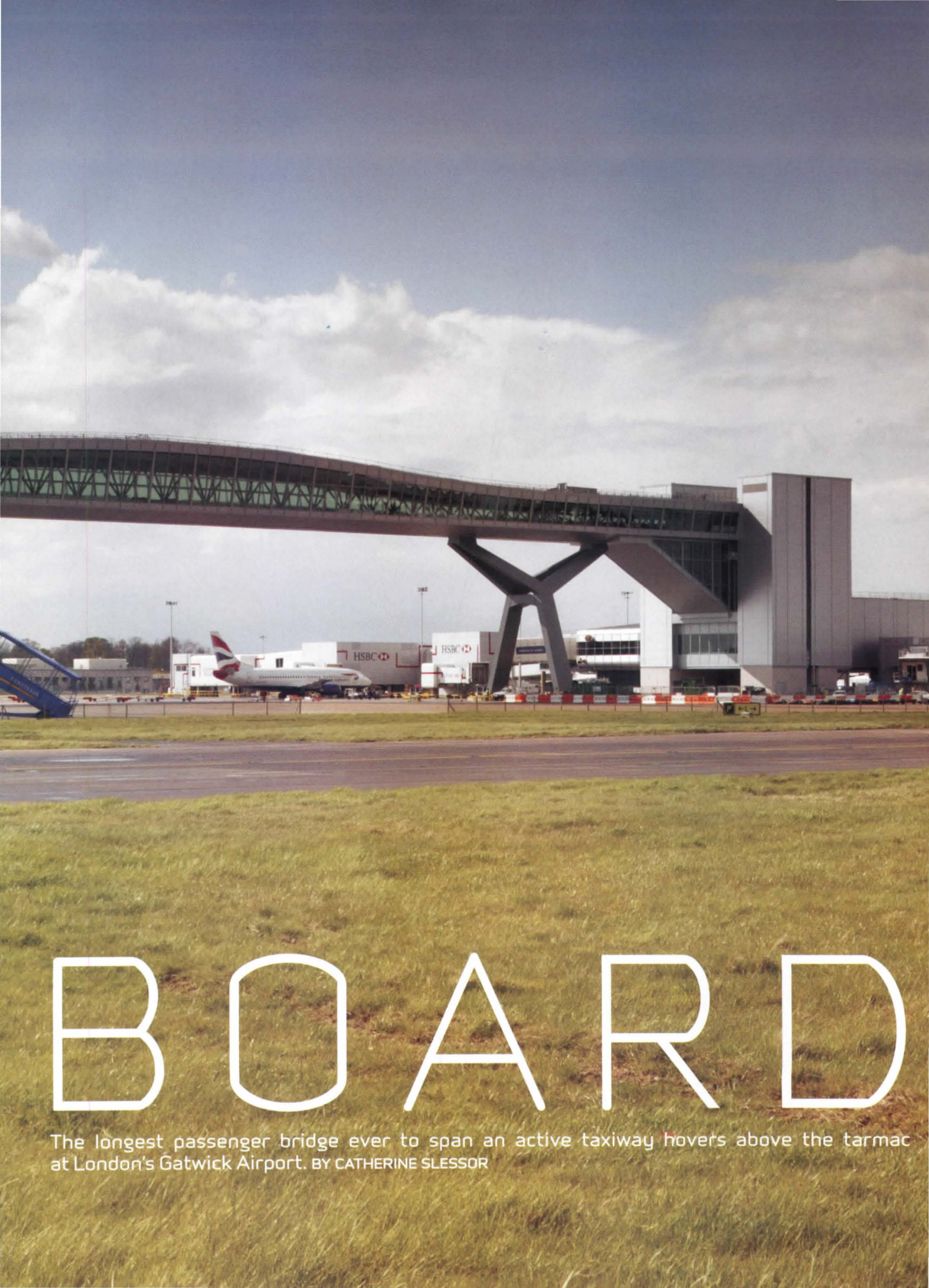


SKY WALK

The mallification of the airport has resulted in many a mind-numbingly banal concourse chock-a-block with retail-chain stores and a food court. Terminals are no longer about simply moving from point A to point B, but distraction and digestion. Rare is the occasion to enjoy the pure spectacle of aviation from flight-inspired spaces. An exception to the rule is the 646-foot-long passenger bridge that now flies across a taxiway at London's Gatwick Airport. Glazed on its long sides, the span contains little more than two walkways and two moving sidewalks. Together with their client, designers from Arup and WilkinsonEyre.Architects have devised a singular opportunity to view aircraft in motion from an uncommon vantage: beneath the feet of travelers.



ABOVE



BOARD

The longest passenger bridge ever to span an active taxiway hovers above the tarmac at London's Gatwick Airport. BY CATHERINE SLESSOR



Concrete piers comprising joined Y-shaped members provide lateral stability for the 646-foot-long span (preceding pages). The structural spine is a space frame of tubular steel containing bundles of smaller tubes (above).

Bridges are intrinsically linked with road, rail, and pedestrian transport, but perhaps the last place you would expect to find one is at an airport, traversing the airside tarmac with jumbo jets trundling underneath. Yet at London's Gatwick Airport, WilkinsonEyre.Architects and the engineers at Arup have designed the largest and longest passenger bridge ever to span an active airport taxiway. At 646 feet long and 72 feet high at its underbelly (about 7 feet taller than the tailfin of a Boeing 747), with a main span of 420 feet, and weighing in at nearly 2,800 tons, the proportions of the new structure decisively trump its lone rival, Denver International Airport's 364-foot-long pedestrian bridge, which is only high enough to clear the smaller tailfins of 737s.

Statistics aside, the new span is a fluidly elegant structure, less a bridge than an elongated glass tentacle supported on massive Y-shaped columns. The ambitious engineering project forms part of a major redevelopment effort at Gatwick, the United Kingdom's second-busiest single-runway airport. It links the 11 gates of the North Terminal's satellite expansion, reducing the hassle and negative environmental impact

of transporting passengers from terminal to plane, previously only possible by bus. Estimates suggest that in its first year of operation, the bridge will save 50,000 bus journeys.

FLUID DYNAMICS

Though it looks effortless and ethereal, Gatwick's new landmark posed considerable design, logistical, and assembly challenges. To find the best solution for such an unconventional structure, the interdisciplinary design team employed a 3-D structural modeling program developed by Oasys, Arup's in-house software arm. The result of the computational analysis is a gently bowed upper section that gives the bridge its required structural depth.

Contained entirely within the building envelope, its space-frame spine consists of two parallel longitudinal steel members forming the top chord of the bridge and a triangular, steel-plated section making up the bottom. The top booms are twin 22-inch-diameter tubular sections with tubular internal members. The giant Y-shaped concrete columns have an A-shaped cross-section to provide lateral stability.



Arriving and departing passengers proceed on opposite sides of the bridge's structural spine. The span's dimensions vary in width from 37 feet to 41 feet and in height from 20 feet to 31 feet.

Circulation towers at each end of the bridge contain escalators, elevators, emergency stairs, and service risers. The glazed façades offer dramatic views out, and their inclined profiles make the structure easier to clean.

Erecting such a massive prefabricated structure in a busy airport required precise and imaginative logistical planning; construction and installation had to take place with minimal disruption to airport operations, so components were prefabricated in a yard at the airport's landside edge. Here, the mammoth steel structure was assembled, clad, glazed, and fitted with mechanical and electrical services. Once completed, the bridge was transported across the runway by means of two giant lifting towers, one at each end. Moving at a sedate 0.3 miles per hour on specially equipped trailers, it took three hours for the span to reach its final destination.

Installation was a delicate operation. The structure was moved into position and slowly lifted up on two beams by a series of strand jacks. The support columns were moved into place, fixed to the deck, and the entire bridge was then lowered and attached to its permanent foundations. The tricki-

est part of the process was coupling the bridge to the support pylons using large-scale pins as connection points. In the end, the taxiway was only closed for 10 days and aircraft were rerouted with no disruption to flights or passengers.

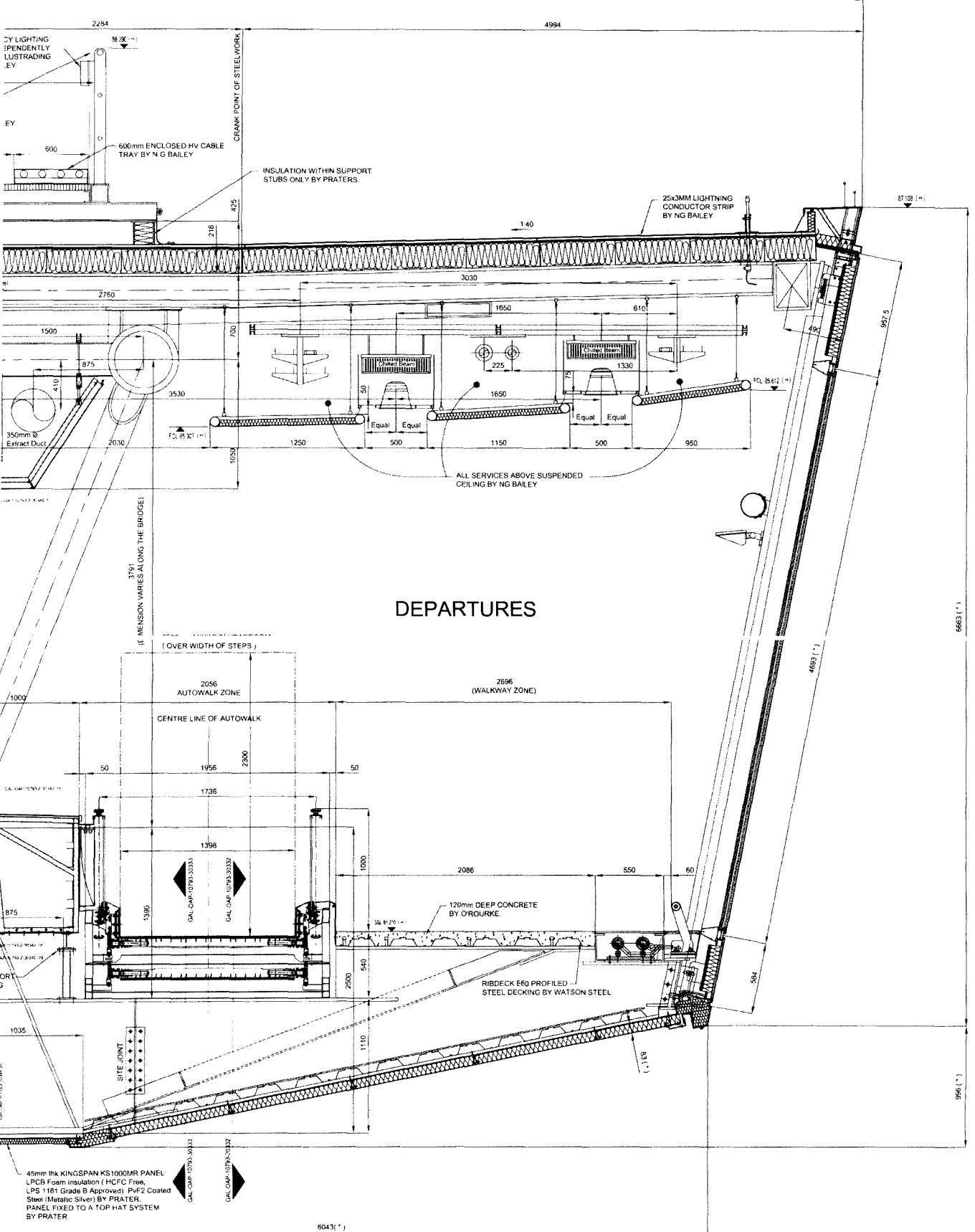
Despite the footbridge's size and the challenges of its construction, the final enclosure has a seamless transparency, its glass sides offering passengers panoramic views of their surroundings—including aircraft slipping slowly and surreally beneath their feet. As Wilkinson.Eyre partner Jim Eyre remarks, "The idea of walking above moving airplanes seems very special." Indeed.

Gatwick Pier 6 Air Bridge, London

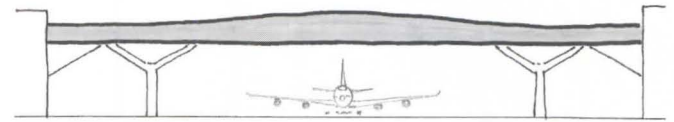
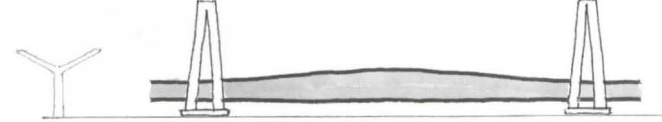
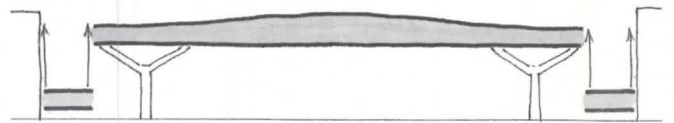
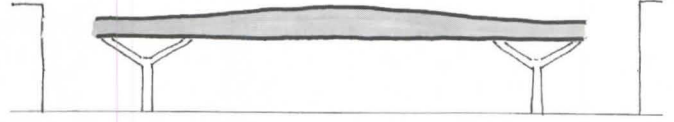
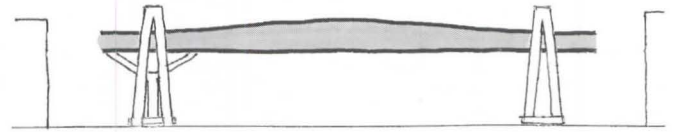
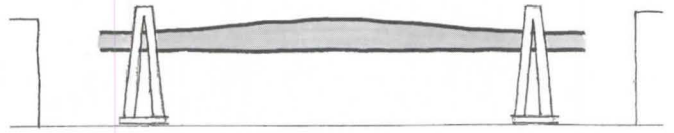
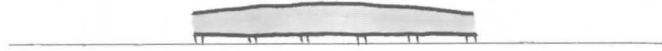
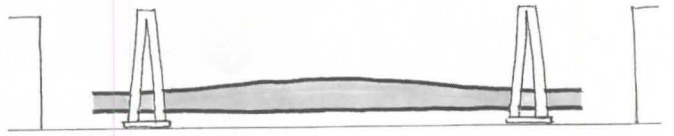
client: British Airports Authority Gatwick **lead designer and structural engineer:** Arup **concept architect:** WilkinsonEyre.Architects **M/E/P engineer:** NG Bailey **subcontractors:** Watson Steel/Fagioli PSC (steel fabricator/erector); Warings (interiors); Schmidlin (glazing); Prater (soffit/roof); Laing O'Rourke (concrete) **general contractor:** Mace **area:** 16,100 square feet **cost:** \$27.4 million

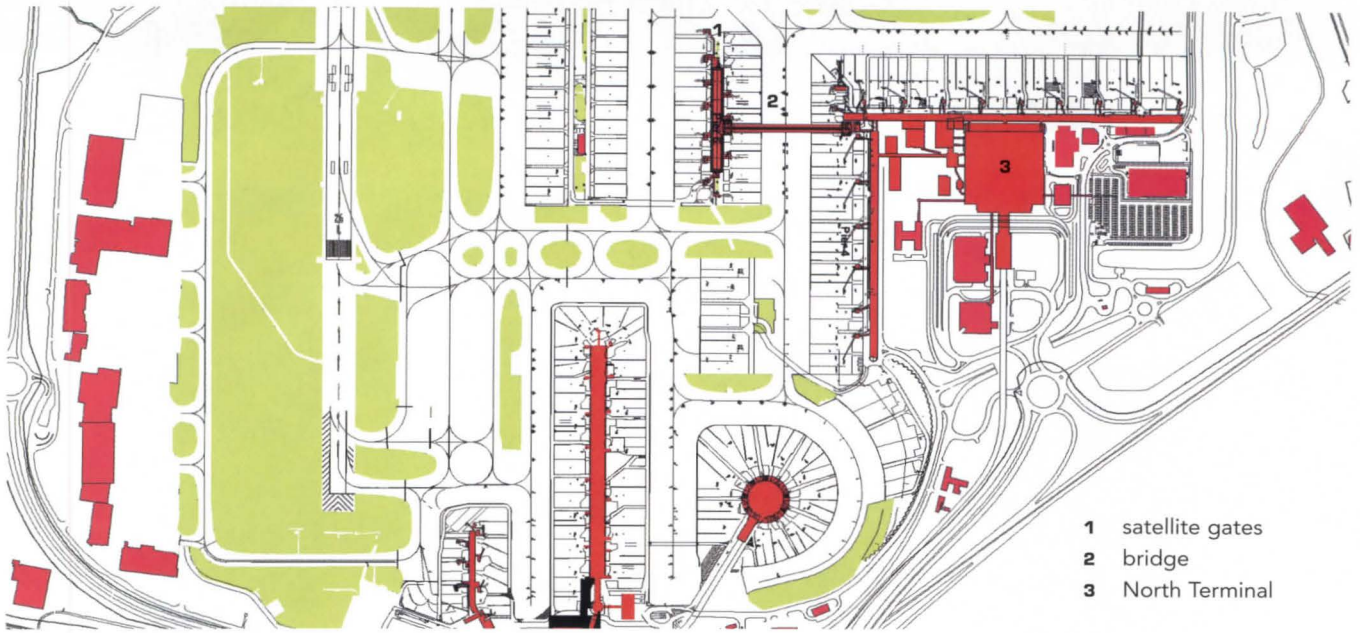
FINAL WALKWAY WIDTH INTERNAL LAYOUT OF FLOORING AND SERVICES TO BE CONFIRMED BY PRATER AND NG BAILEY

7278



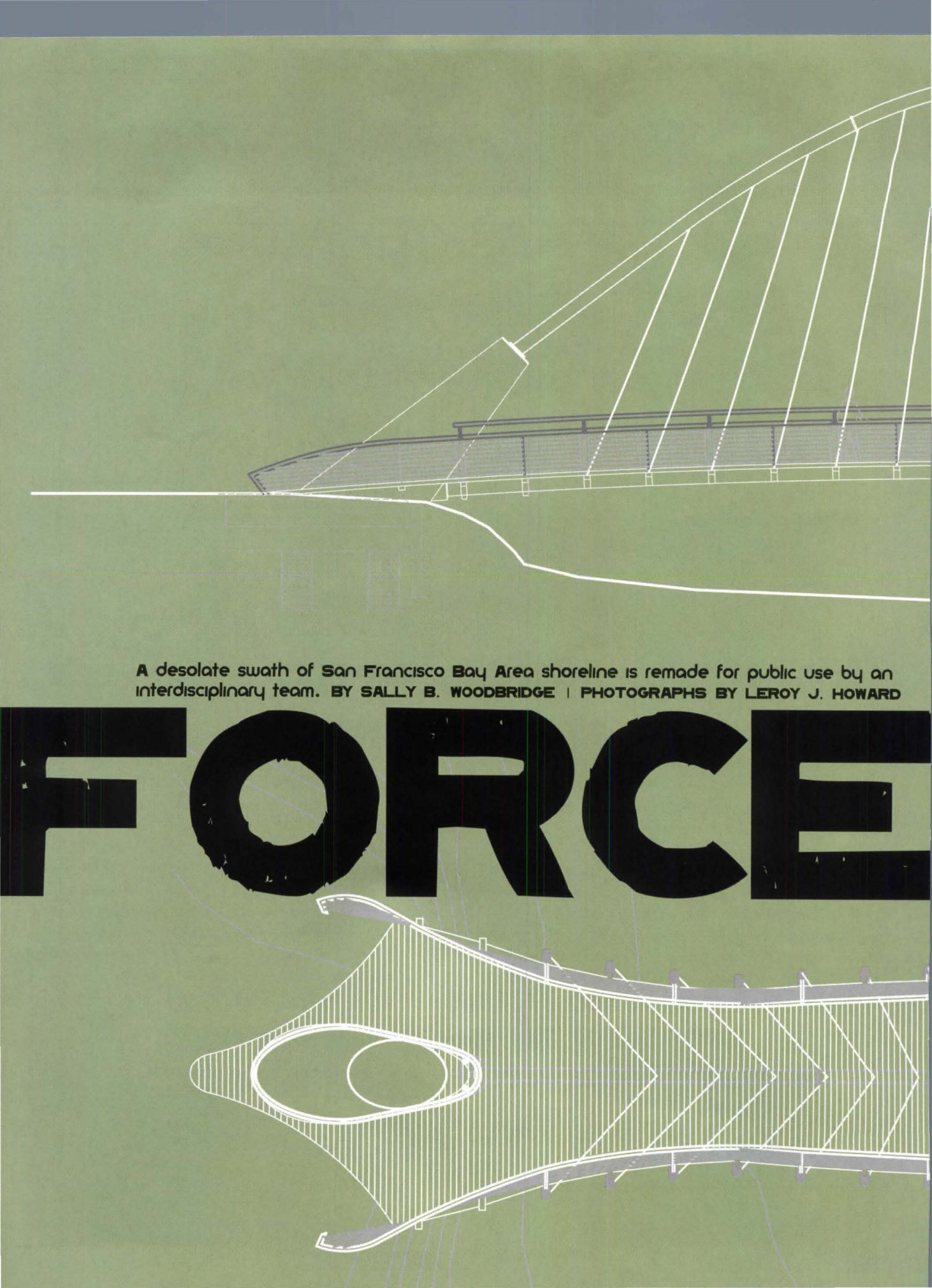
section 17"





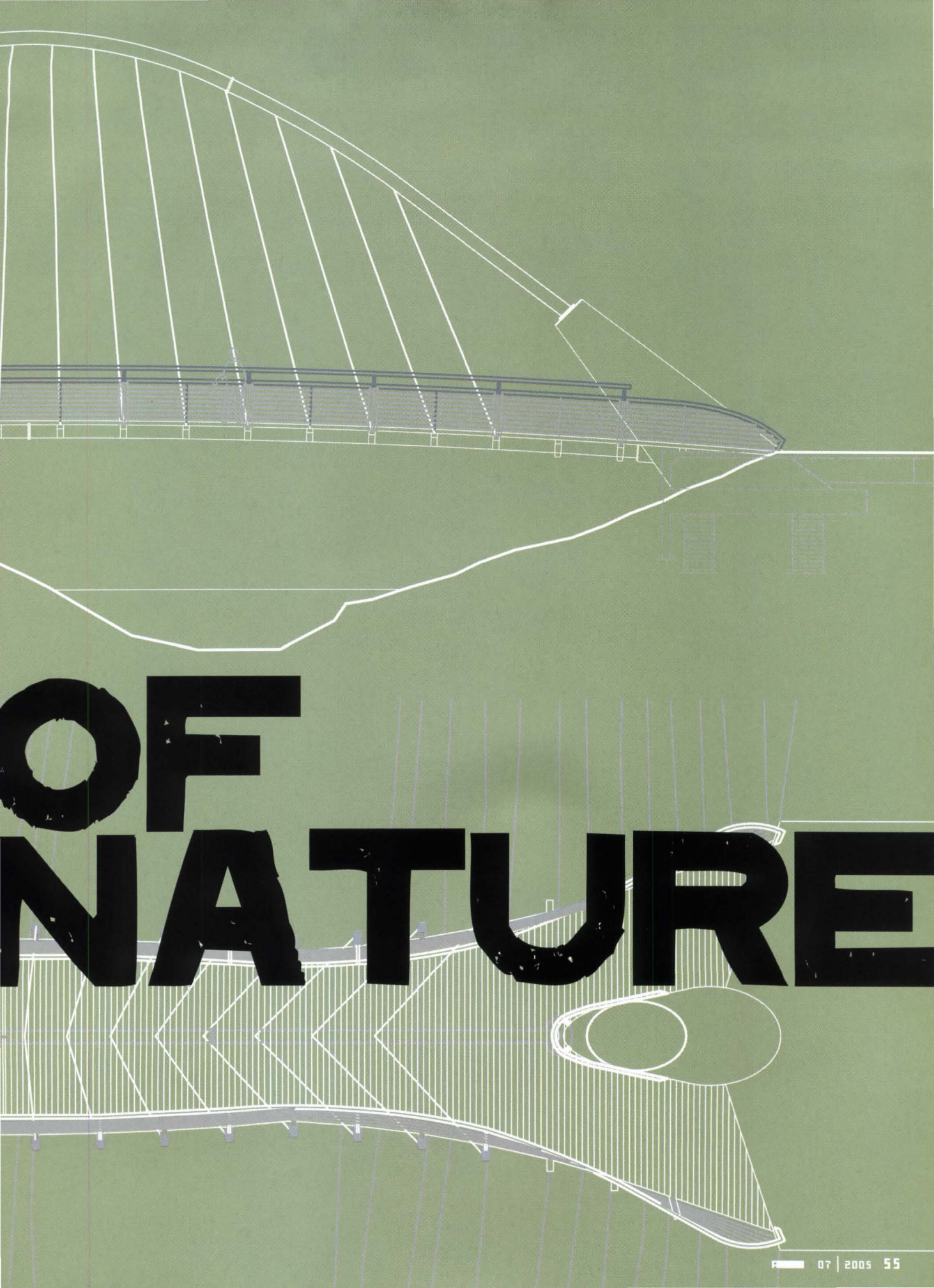
With only 10 days set aside to assemble the new Gatwick Airport bridge, off-site prefabrication was required to minimize the amount of time the taxiway was closed. Five components—a 2,800-ton, 538-foot-long central span; two Y-shaped support columns; and two 56-foot-long end-deck sections that link the bridge to the vertical circulation towers—were fabricated separately in a specially equipped yard about a mile from the project site. Self-propelled transporters were used to ferry the pieces to the taxiway between the terminal and its satellite gates and to position the components once they reached the site. The construction approach (above and facing page) proceeded in choreographic fashion: Bridge segments were fastened together at ground level; next, concrete Y-columns were assembled, followed by the erection of the lifting towers; the bridge was then raised and transporters moved the columns into place, where they were fixed to the deck; the entire assembly was lowered onto its permanent foundations and the lifting towers were removed; last, the end-deck spans were raised and attached.



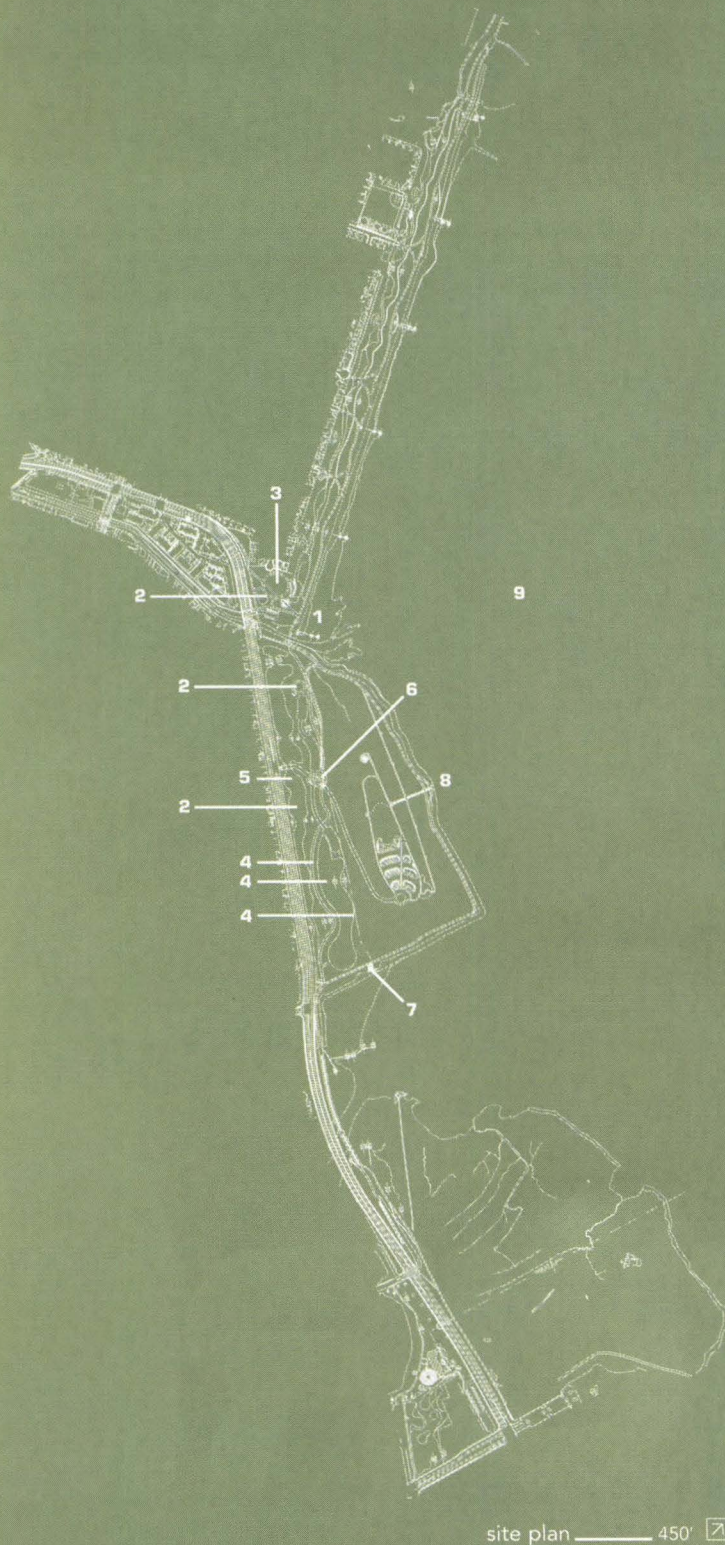
The background of the entire page is a solid, muted green color. Overlaid on this background are white line drawings of architectural structures. In the upper right, there is a drawing of a bridge with a curved deck and several vertical supports. In the lower right, there is a more complex drawing of a bridge or walkway with a curved deck, multiple vertical supports, and a series of diagonal cross-braces. The drawings are minimalist and technical in style.

A desolate swath of San Francisco Bay Area shoreline is remade for public use by an interdisciplinary team. BY SALLY B. WOODBRIDGE | PHOTOGRAPHS BY LEROY J. HOWARD

FORCE



**OF
NATURE**



- | | |
|---------------------|----------------------|
| 1 pedestrian bridge | 6 maintenance office |
| 2 restrooms | 7 outdoor classroom |
| 3 picnic shelters | 8 windsurfing launch |
| 4 sun shelter | 9 San Francisco Bay |
| 5 entry kiosk | |

Shoreline Parks, a two-and-a-half-mile stretch along the San Francisco Bay, is interrupted by utility towers carrying power lines across the site and the mound of a capped landfill near the water. Yet this desolate and often windy expanse of waterfront, under the jurisdiction of the city of San Mateo, has lately been humanized with the first of several parks the city has planned to reclaim its bay shore. Eventually, the San Mateo parks will be part of the Bay Trail, a 450-mile continuous recreational corridor intended to encompass both San Francisco Bay and San Pablo Bay to the north. For the first phase of the project, which opened to the public last month, local landscape architects 2M Associates and Royston Hanamoto Alley & Abey located the architectural components on the 70-acre site, and Endres Ware designed a gatehouse, a pedestrian bridge, public restrooms, picnic shelters, and other small structures.

Dispersed along the trails that wend their way through the park, the structures contribute to a feeling of openness that encourages visitors to pursue the activities of their choice, from jogging and cycling to picnicking. The palette of materials and details shared among the new structures promotes a perception of the meandering park site as a single entity.

The design team at Endres Ware approached the architectural program by thinking of the wetlands as what they describe as a natural filter. They designed the park's structures to provide a framework for the functional spaces without restraining movement within and through them. The forces of wind and gravity are expressed along with a festive feeling appropriate to a waterside recreation area.

EARTH, WIND, AND FRISBEES

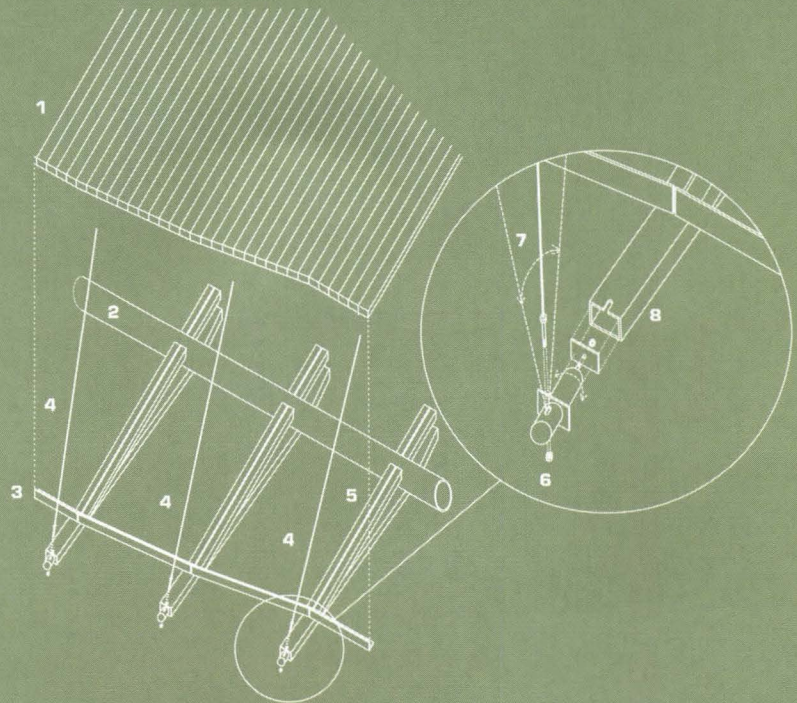
The allusion to natural forms is most pronounced in the splayed forms of two picnic shelters (page 60), encircled by a pathway, that suggest wind-blown leaves arcing away from each other. The auxiliary veins of these leaflike forms are wood slats; they are bound together by upper and lower steel cables that run through them like the central vein of a natural leaf, connecting to cast-concrete piers at either end. The slats fan out 18 feet to form the edges of the shelters. While the cables pull the forms down, arches of steel pipe set beneath the slats lift their outer edges, giving the whole assemblage a dynamism that aptly suggests movement.

A more abstract interpretation of the natural world is the pedestrian bridge that crosses San Mateo Creek, which divides the site. The bridge features a single arch of steel pipe springing from two elliptical concrete cones at either end of the deck. The deck's wooden members are cantilevered from a torsion tube beneath the bridge, spanning the length of its underside. The slight separation of the deck from this tube makes the bridge appear to float. The deck itself rests in a sling of steel rods hung from the arch above and attached to the pipe below by triangulated ribs of angled and rectangular tube sections. This way, the bridge's undulating form is made

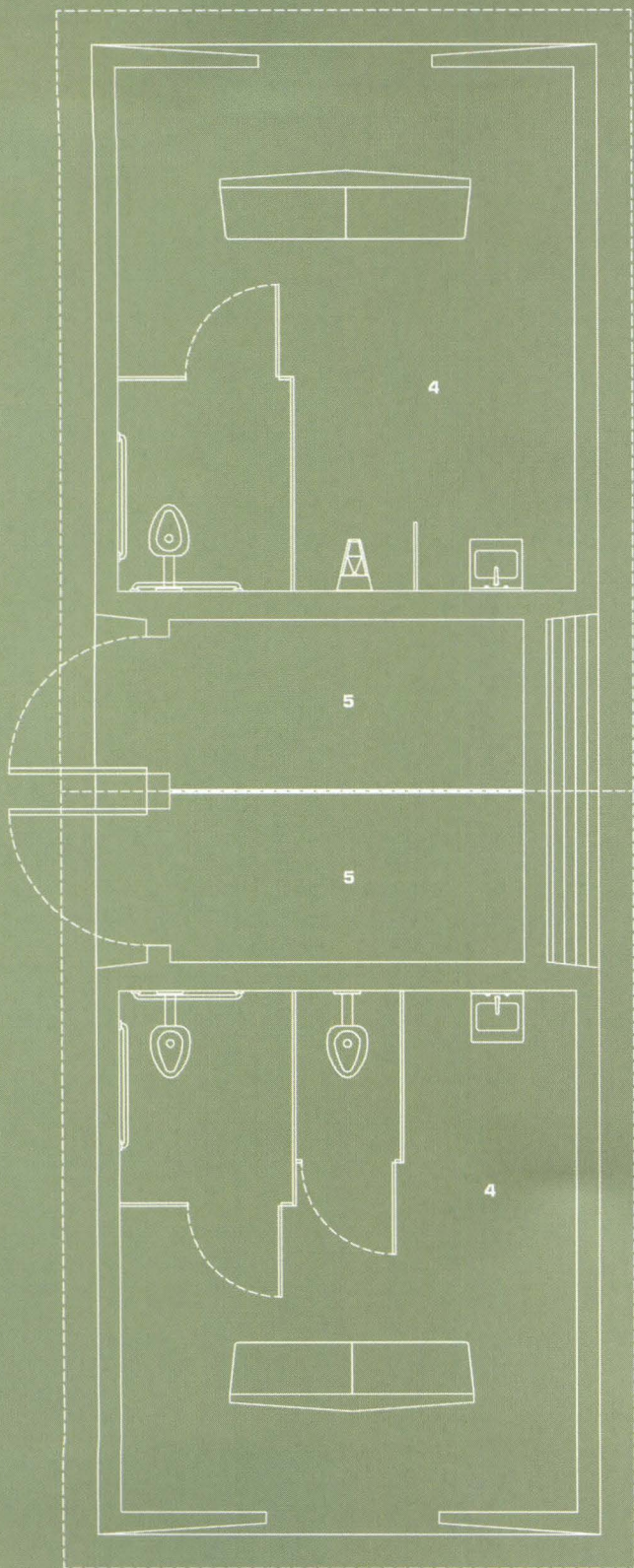



The first phase of San Mateo's Shoreline Parks includes wetlands restoration, landfill capping, and recreation infrastructure (facing page). A pedestrian bridge (above and pages 54 and 55) spans San Mateo Creek; its graceful lines evoke natural forms and flows. The utility lines that cross the park are more than 50 feet above the land, well within government guidelines.

- 1 ipe decking
- 2 torsion tube
- 3 perimeter angle
- 4 hanger rod
- 5 double-angle strut
- 6 adjustable-angle steel pipe
- 7 adjustable hanger rod
- 8 steel-tube strut



pedestrian bridge deck, detail 1'



restrooms, plan ——— 2' 

structurally stable. At its midsection, the deck bows out to create a wider platform for those wishing to stop and view the bay; a metal railing follows the curve of the bow, bending outward at the ends and inward at the middle.

The rectangular concrete structures housing the public restrooms are located downhill from the landfill mound. Seen from higher ground nearby, their roofs suggest the movement of flight through their butterfly form. Up close, the rafter ends of scissored cedar beams, which support the roof and extend upward from its nexus above a clerestory air space, are visible. A scissors truss is also used in a 16-by-20-foot shelter that provides shade in the park's dog run; the repetition of this structural element is both economical and expressive.

WORTH THE WAIT

Shoreline Parks is a testament to the city of San Mateo's longstanding commitment to serving its residents. Rather than approach this large swath of waterfront in a piecemeal way, the municipality devoted several years to aggregating many small grants to reclaim the land and then worked in close coordination with the project team. One hopes this approach will influence other jurisdictions in the area to consider the big-picture potential of the Bay Trail and work together to create a unified design that will enhance the pleasure of recreating by the bay. ■

Shoreline Parks (Phase 1), San Mateo, California

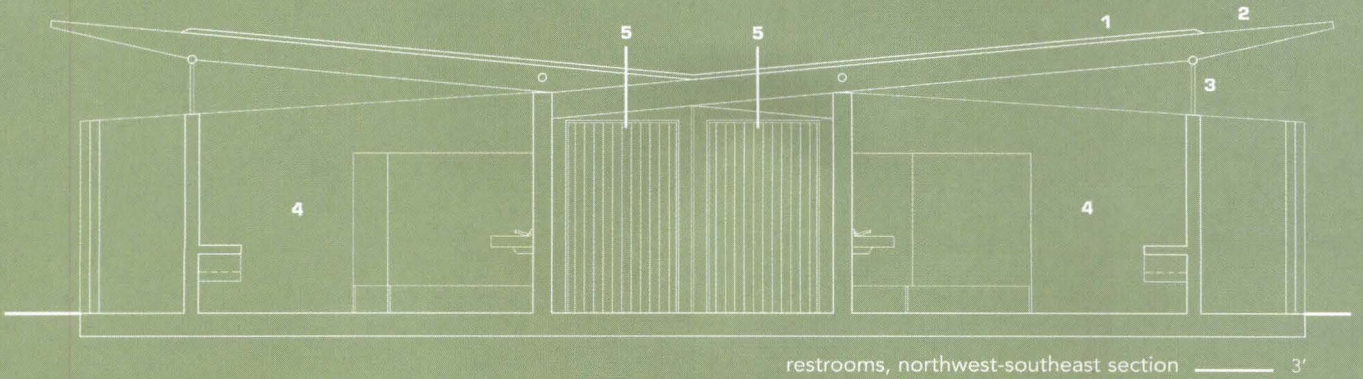
client: City of San Mateo—Sheila Canzian (director); Dennis Frank (landscape architecture); Ron Mason (construction management) **planning and landscape architecture:** 2M Associates, Berkeley, California—Patrick Miller, Jane Miller (principals) **associate landscape architect:** Royston Hanamoto Alley & Abey, Mill Valley, California—Manuela King (principal); Aditya Advani, Riz Gache, Nathan Lozier (project team) **architect and structural engineer:** Endres Ware, Berkeley, California—John Ware, Paul Endres (principals); Benjamin Corotis, Ian Young, Kartik Desai, Cynthia Wang, Robo Gerson (project team) **engineers:** MacLeod & Associates (civil); Lowney Associates (geotechnical); Mazzetti Associates (M/E/P) **consultants:** LSA Associates (biology); Balance Hydrologics (hydrology); MHA Environmental Consulting (environmental); Jim Eddy Associates (irrigation); Kate Keating Signage (signage); Gyroscope (exhibitions); Topflight Specs (specifications); Cromb Associates (cost); Lisa Park Design (graphics) **general contractor:** Robert A. Bothman **area:** 70 acres **cost:** \$12 million (structures, landfill capping, wetlands restoration)

Specifications and suppliers

masonry: Versalock **metal roofing:** Berridge **glass:** Quality Glass **skylights:** Royalite **doors:** Mesker (metal); McFarland Door (wood) **hinges:** Crown Industrial **closers:** LCN **paints and stains:** Kelly Moore, Cabot's **metal coatings:** Tnemec **task lighting:** Peerless **rest-**



Rendered in cast-in-place concrete walls and custom cedar-batten doors, the restrooms are protected by a butterfly roof with a standing-seam metal deck on cedar rafters and galvanized-steel pipe framing

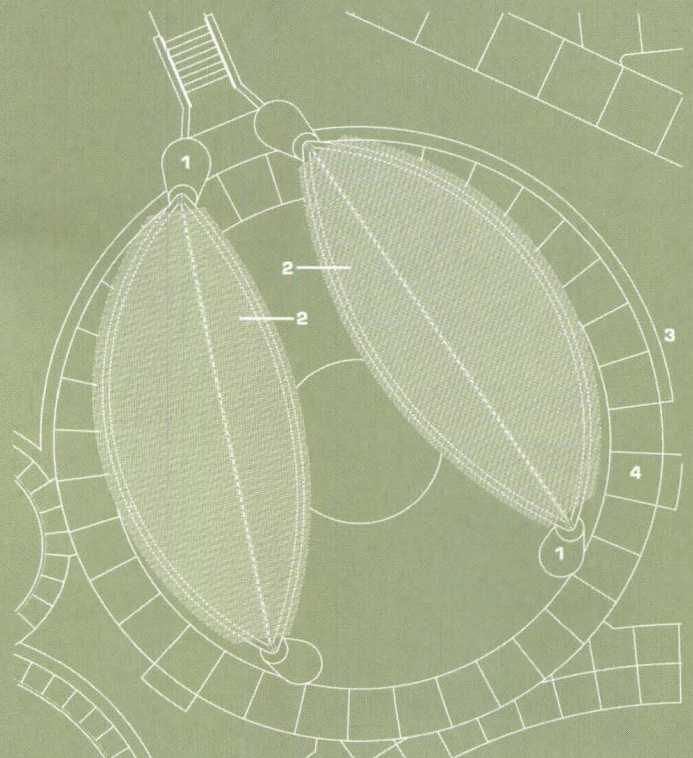


- 1 standing-seam metal roof
- 2 Douglas fir rafters
- 3 steel-pipe frame
- 4 restroom
- 5 maintenance room



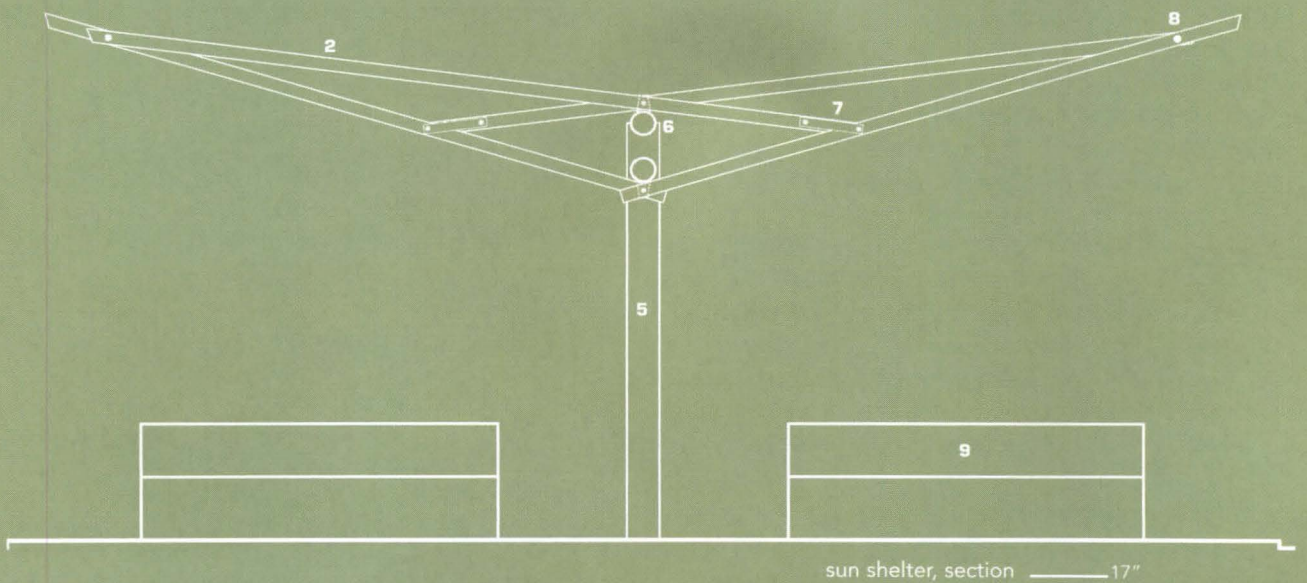
For picnickers, western red cedar slats resting on bowed steel members provide a shade canopy, jutting out to 18 feet at their widest point. The pedestrian bridge is visible beyond the picnic area.

- 1 concrete pier
- 2 western red cedar slats
- 3 cast-in-place concrete bench
- 4 concrete pad
- 5 10-inch-diameter galvanized-steel pipe column
- 6 8-inch-diameter galvanized-steel pipe beam
- 7 1/4-inch steel plate
- 8 3/4-inch-diameter continuous bolt
- 9 metal bench





Shoreline Parks' new plantings and wetlands restoration help reclaim the San Francisco Bay waterfront, offering a green edge to San Mateo, a city of 90,000. Sun shelters dot the 70-acre site's midsection.



INSTRUCTIVE SPACES



Ohio State's new architecture school building, by Mack Scogin Merrill Elam Architects, has pedagogical ambitions. by Katie Gerfen | photograph by Timothy Hurnley

An old proverb says that a little knowledge can be a dangerous thing. A cliché, perhaps, but something important to remember when designing an innovative building for troublesome critics: students who aspire to be the architectural innovators of tomorrow. Mack Scogin Merrill Elam Architects embraced this challenge in designing a new home for Ohio State University's Austin E. Knowlton School of Architecture, creating a marble-shingle-clad design laboratory where studios serve as examples of materials, form, and spatial relationships, as much as they serve as rooms for learning.

At the core of the design of the school, which opened last September, is Knowlton's teaching philosophy, "design education by distraction": the belief that students learn best by holistic observation of design in their surroundings. After several town-hall-style discussions among the architects, faculty, and student body, the design team echoed the philosophy literally. A program of ramps and connected volumes was developed to promote student interaction, both prescribed and spontaneous, with the building.

OUT IN THE OPEN

Students who enter the Knowlton school are confronted with double- and triple-height spaces, exposed concrete walls and ductwork, and ceiling-mounted custom light boxes of brushed metal and white polycarbonate in the studio spaces. Clear glass walls ensure that students can't help but absorb the building's form and function as they tackle their own designs. An expansive central hall, used for critiques and student-work displays, is flanked by a network of ramps leading to upper levels and a large concrete staircase at the east end that serves as a place for students to congregate. All of these elements, says Mack Scogin, aim to enrich the learning experience through proximity. "The exposed materials and the interplay of spaces, were all part of the idea that the building would instruct, that it would say, 'These are the things that it takes to put a building together.'"

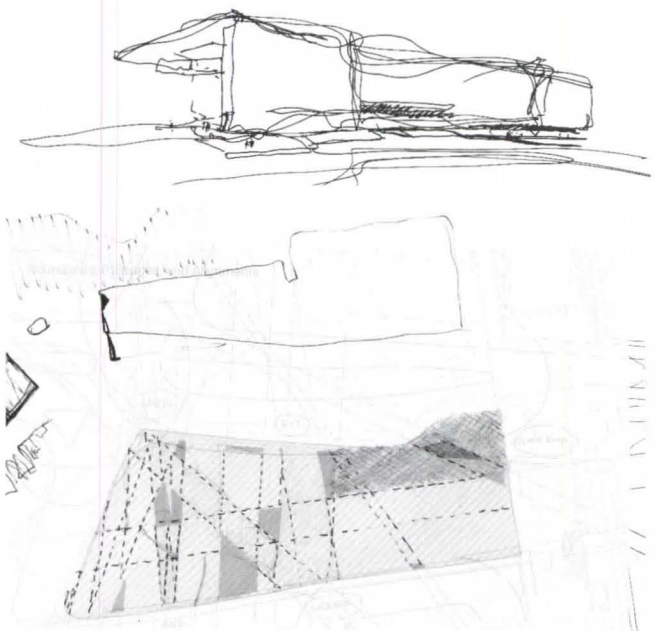
Another quintessential element of the design was one that almost didn't happen: the library, situated on the top floor of the five-story building. Not included in the original scheme for funding reasons, the library has already won laurels from the architectural community and the American Library Association. The two-level, glass-enclosed book repository is suspended over studio spaces, coaxing another level of dialogue between students designing projects at their workstations below and those doing research or studying for exams above. The library rises a story above the roofline, where it is clad in frosted green glass that protects the books from harsh sunlight. When illuminated at night, the glowing box serves as a beacon from the ground and, perhaps more startlingly,

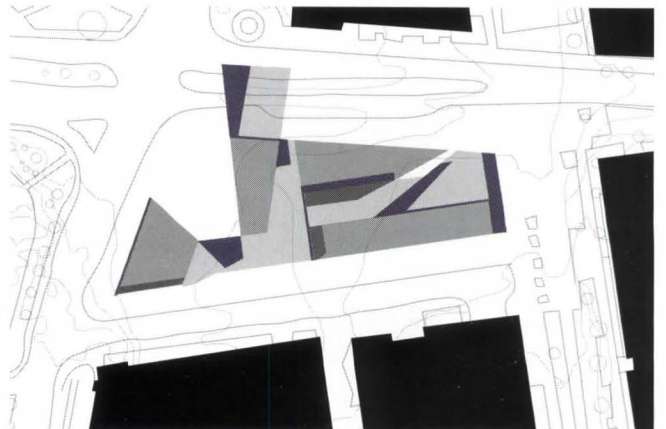
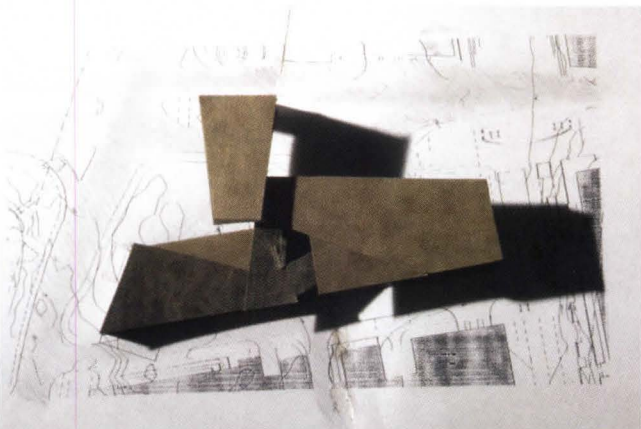
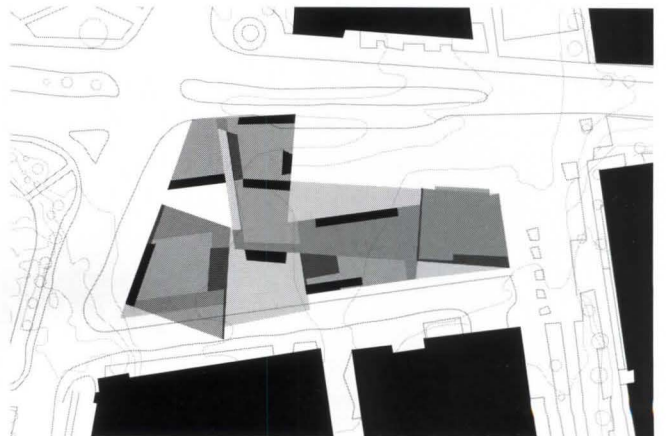
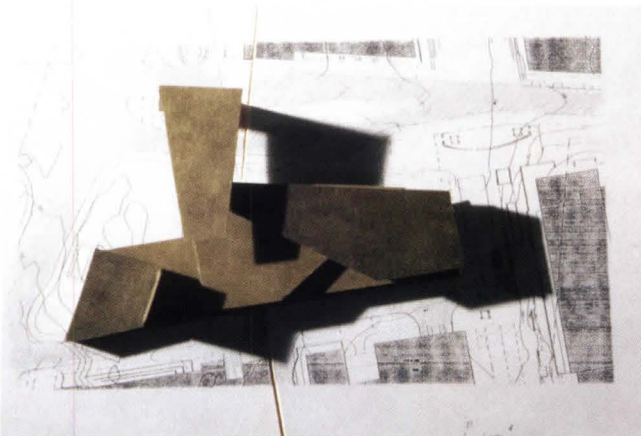
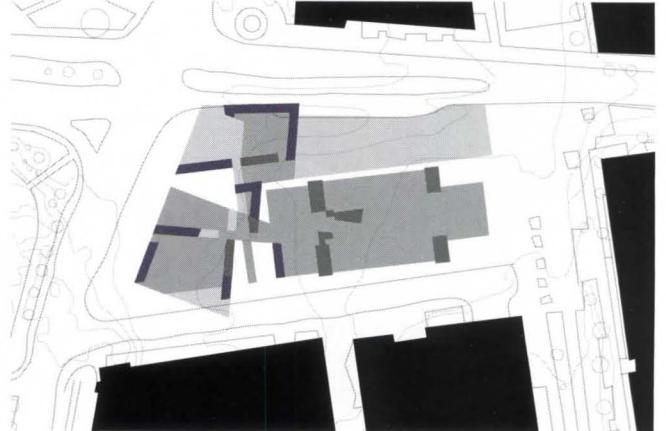
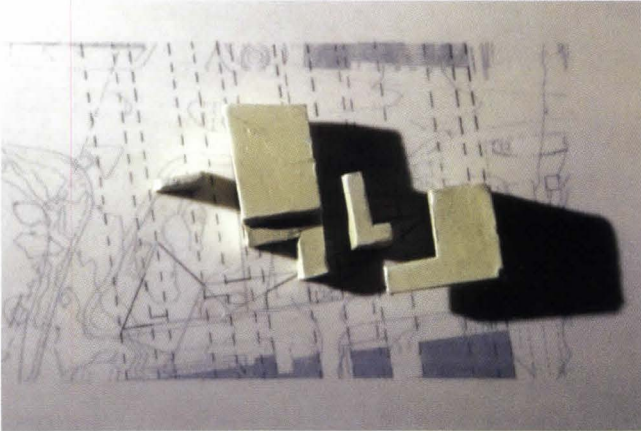
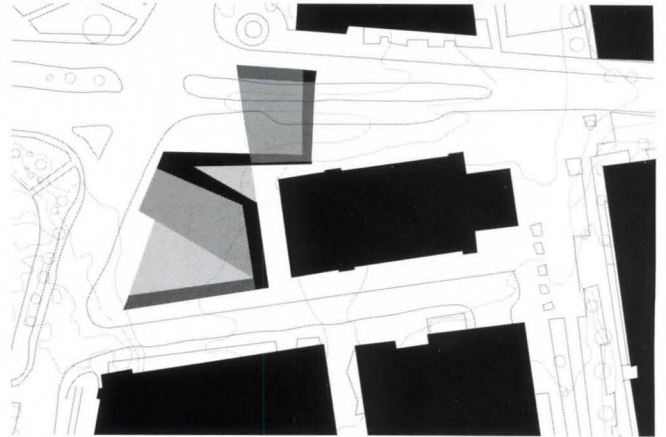
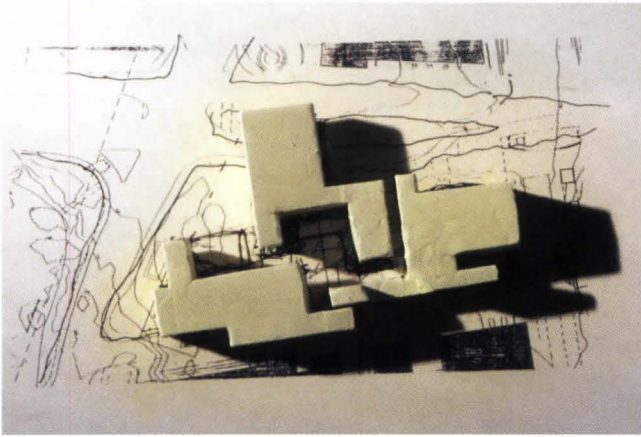
as a point of reference for airplane passengers viewing the landscape on approach to the Columbus airport.

NOT JUST A PRETTY FACE

This is architecture that is treated not as an object but instead as an evolving space influenced by students. They can move temporary partitions (pin boards on casters), claim spaces with posters and drawings, and stage "interventions," as the school's director Robert Livesey calls them. "The design process is a messy process," notes the director. "It was important to create a space where the students could do whatever they want, and at the end of the year we could clear it out and start over."

But does the concept of architectural teaching by distraction really work? "It is a different philosophy of design education, and to be honest, it's an experiment," admits Livesey. "But it is worth doing." The students tend to agree: "Seeing what level you can take a building to inspires you to push your own designs further," says Karen Gustafson, a graduate student, adding, "We have this great main space to have our reviews in, and people really look at each other's work." Others laud the building's interior transparency and say they purposefully use the ramps instead of the staircases because these allow them time to consider the scale and composition of the spaces. So far, the architects have passed muster with the in-house critics—but the true test is yet to come: Will a building based on pedagogical ideas remain useful as the teaching program inevitably evolves? Time will tell. ■





Unsure whether funding would allow for an entirely new building, the architects developed numerous schematic massing studies; some included the existing architecture building (top right and next below) and others explored the possibility of a cleared site. Ultimately, the school elected to demolish the old building and start fresh.



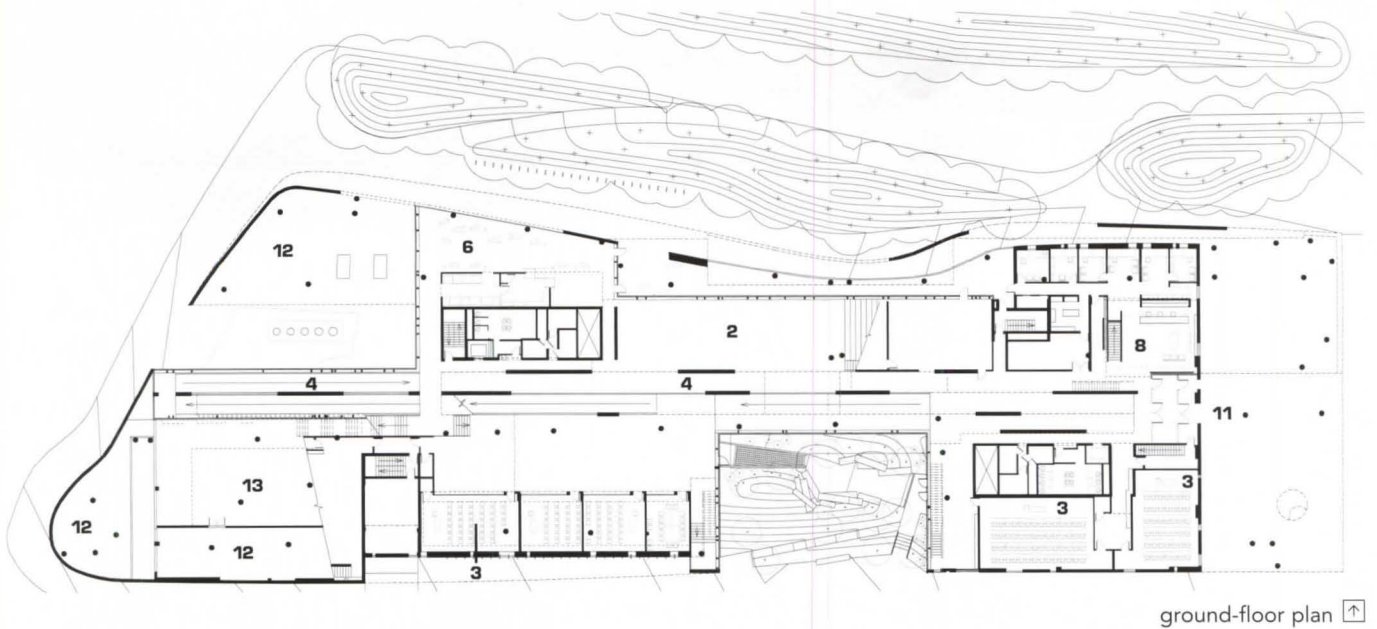
A monumental portico (above) invites students into the school's double- and triple-height spaces. The interiors promote occupant interaction by maximizing sightlines and visibility between spaces such as the library and the studio (below)



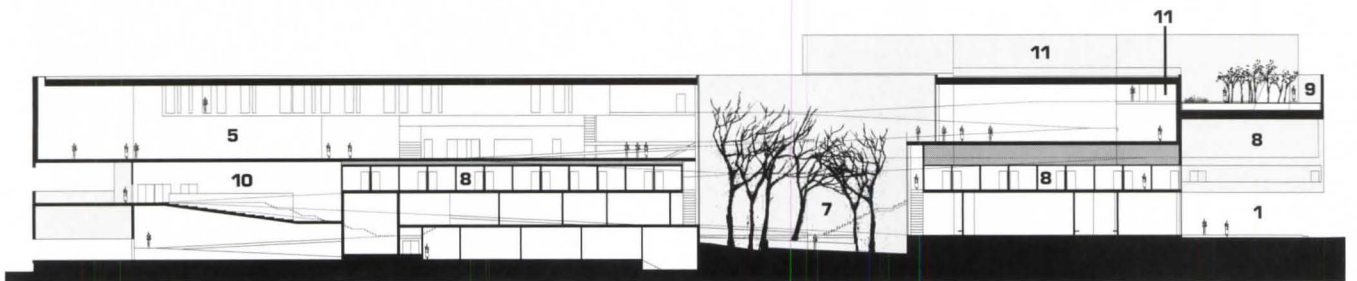


The undulating façade of white marble shingles (above) encloses a central hall where students can observe class-work and critiques from the large-scale stairs or from the corridors and ramps overhead (below).

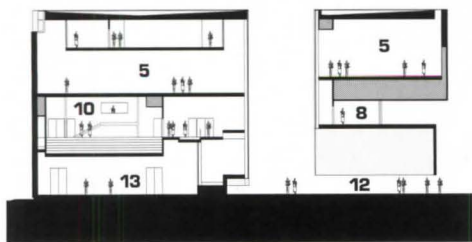




ground-floor plan ↑



east-west section — 30'



north-south section — 26'



site plan — 500' ↑

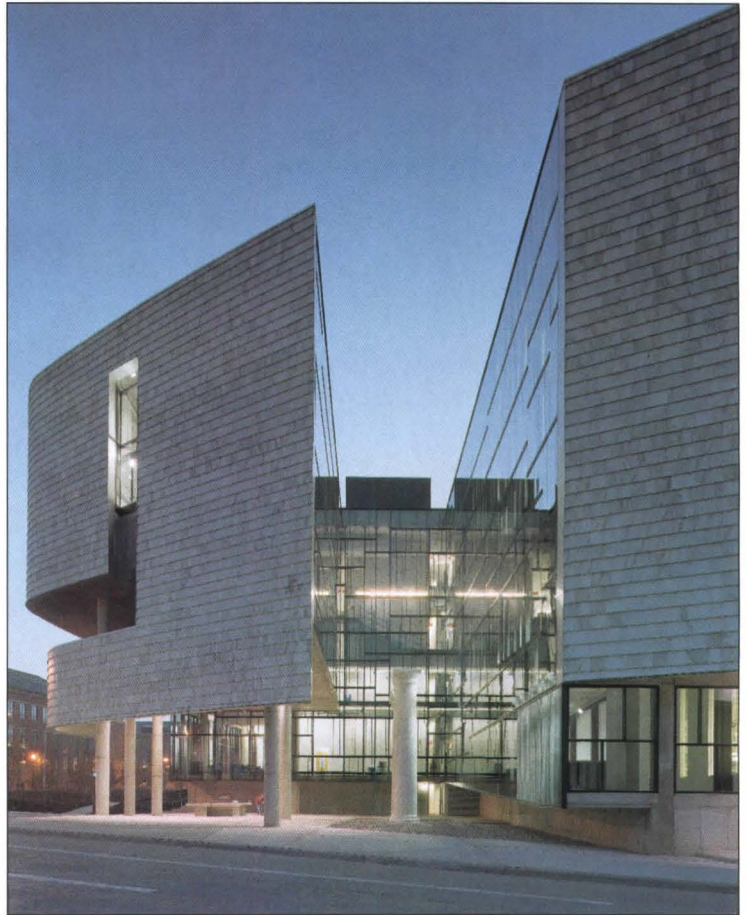
- | | | |
|----------------|----------------------|------------------|
| 1 entrance | 6 café | 11 library |
| 2 central hall | 7 courtyard garden | 12 outdoor court |
| 3 classroom | 8 offices | 13 wood shop |
| 4 ramp | 9 rooftop garden | |
| 5 studio | 10 main lecture hall | |

Austin E. Knowlton School of Architecture, Columbus, Ohio

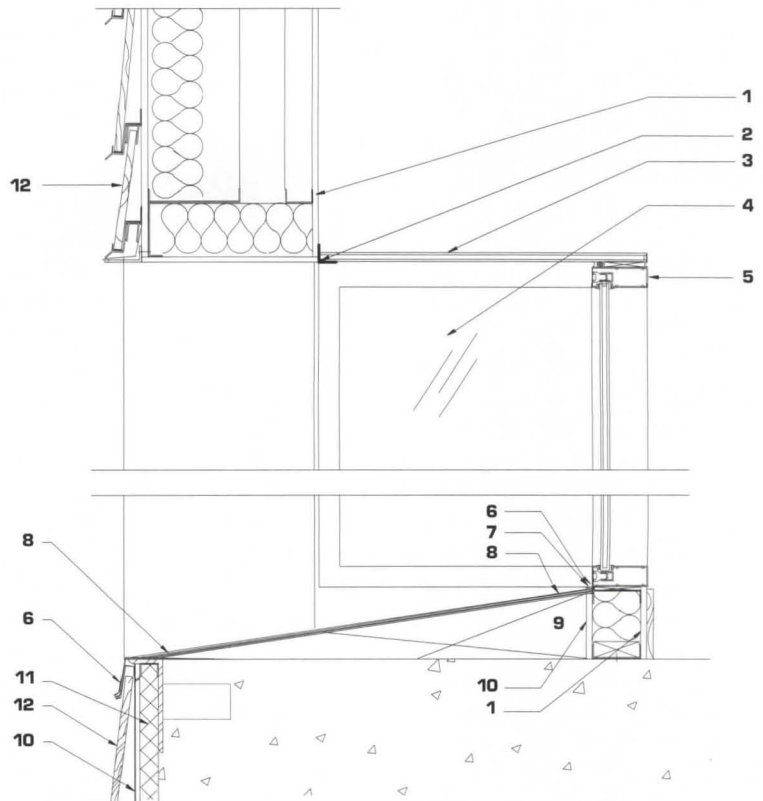
client: Ohio State University **architect:** Mack Scogin Merrill Elam Architects, Atlanta—Mack Scogin, Merrill Elam (principals); David Yocum (project architect); Brian Bell, John Trefry, Penn Ruderman, Barnum Tiller, Cecila Tham, Jeffrey Collins, Kevin Gotsch, Margaret Fletcher (project team) **associate architect:** Wandel and Schnell Architects, Columbus, Ohio—Robert Wandel (principal); Cissy Wong (project architect); Alan Sulser, Ivan Amy, Lannetta Vader, Yanitza Brongers, Kristen Poldemann (project team) **engineers:** Lantz, Jones & Nebraska (structural); HAWA Consulting Engineers (M/E/P); Bird & Bull (civil) **consultants:** Michael Van Valkenburgh Associates (landscape); Ramon Luminance, Ramon Noya (lighting); Wiss, Janney, Elstner Associates (rainscreen) **general contractor:** P. J. Dick **area:** 175,400 square feet **cost:** \$26 million

FINDING COMFORT IN AN UNEXPECTED SKIN

What happens when a patron drives a major design element? The white Vermont marble skin of the Knowlton School of Architecture was not Mack Scogin and Merrill Elam's idea; rather, it was a requirement of the building's largest donor, Austin E. Knowlton—an alumnus for whom the school was renamed in 1994—who considered the stone to be an appropriately noble material. The architects were skeptical. As Robert Livesey, the school's director, points out, "The last thing we wanted to do was create an honorific building." But the architects found a way to feel comfortable in their imposed skin, despite marble's challenging properties, such as an overall brittleness and fragility not found in other materials. The marble posed another problem, points out Scogin, in that it expands and contracts substantially with temperature changes, making it less than ideal for Ohio's notoriously hot summers and cold winters. The solution was to mill the marble into shingles, creating the outer layer of a rainscreen, each held in place by a series of extruded aluminum clips. The result not only created a visually interesting surface reminiscent of the slate shingles on Scogin and Elam's music library at the University of California at Berkeley (December 2004, page 74), but the cladding also serves as an example of a traditional material used in an uncommon way.



- 1 gypsum board
- 2 aluminum angle
- 3 1-inch insulated laminated glass
- 4 1-inch insulated glass
- 5 aluminum window system
- 6 flashing
- 7 sealant
- 8 aluminum sill on plywood
- 9 blocking
- 10 underlayment
- 11 rigid insulation
- 12 marble shingle



envelope detail at "reverse bay window," studio level — 9"

APPLE'S CORE

The simple lines of the Apple Computer stores belie complex inner workings.

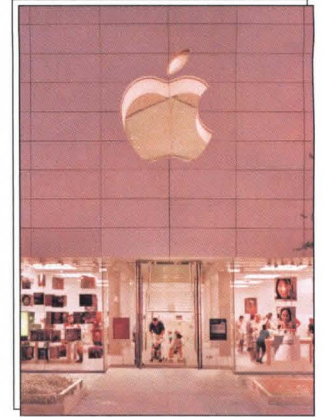
by Anna Holtzman

"We're one of Apple's best-kept secrets," says Tim Kobe of the San Francisco-based design firm known as Eight Inc. Kobe, along with his partner Wilhelm Oehl, began a professional relationship with Steve Jobs in 1999, working on myriad aspects of the company's visual identity, from new product launches to secondary reseller channels. Starting with the technology company's first retail stores in Washington, D.C., and Glendale, California, which opened in 2001, Kobe and Oehl worked closely with Apple to develop the stores' aesthetic, physical layouts, and special concepts such as the "genius bar," where customers can obtain one-on-one technical advice from staff experts. With the company's flagship store in New York City's boutique-infested SoHo, the Berkeley office of architecture firm Bohlin Cywinski Jackson (BCJ) became involved as well, to collaborate on the overall design of the stores.

COLOR THEORY

When Apple commissioned its first shops, Eight Inc. was designing for a product line marked by bright, eye-popping colors. To offset the bubble-gum hues of the iMac and other peppy products, they used white Corian fixtures, black-stained wood shelving, and a maple floor. But with the computer manufacturer's subsequent switch to white, titanium, and other neutral product colors, Eight Inc. and BCJ have had to update the retail look. Starting with the SoHo store in 2002, the designers introduced a new palette consisting of a **gray limestone floor** and **maple display fixtures and shelving**. "The wood fixtures tend to look more like workshop pieces rather than sculptural pieces," as the older Corian monoliths did, says BCJ's Karl Backus, whose recent projects for Apple include new shops in London and Nagoya, Japan.

In updating the older stores to the new visual identity, the designers also had to make adjustments to accommodate the high volume of foot traffic that these popular venues attract. For example, **purchasing counters** were expanded at many locations. Product display space was also shuffled to accommodate the proliferation of third-party accessories developed for Apple items such as the iPod. And a new feature has been introduced at the London store called the "studio": Like the genius bars for technical support, the studio offers customers one-on-one sessions with staff members, in this case to get "creative support" with challenges such as setting up an electronic photo album.



At Apple Computer's store in Ginza, Japan (left), the company logo is incised into the retail chain's signature bead-blasted stainless-steel storefront. The Chicago outlet (right) diverges with a limestone face.

CONCEALED COMPLEXITY

The most significant display fixtures in the current store design are the **four-legged wooden tables** on which the computers are mounted. "It might look like a simple wood table, but it's a bit like an aircraft carrier in its complexity," says Kobe, referring to its slots and openings on the surface and the complex set of support systems concealed within—connectors, transformers, cables. "There are a lot of systems that get consolidated into one **spiral electric cord** that goes down to the floor," explains Kobe. "It's handling a lot of technology, and it's set up in such a way that as the products evolve, it can still respond to those changes."

The tables—together with everything else about the stores—are also significant for their advanced workmanship. "The level of craftsmanship that Steve [Jobs] requires is exceptional compared to what most people will accept," attests Kobe, "to the point of sending Wilhelm to Canada to hand-select the **veneer flitches**." Most of the woodwork is done in-shop with CNC milling and laser-cutting technologies that allow the various components to come together in a very tight and precise way when assembled on site. Kobe relays, "A lot of it is planning and making sure that the veneers are sliced perfectly and that we have fasteners that draw the products together in such a way that the joints that are joined on site read the same as the existing veneer joints." To finish the wood pieces, designers at Eight Inc. initially tested a conventional and highly durable urethane; however, they found that with age and exposure to sunlight, it turned yellow. So they replaced this product with an **oil-based finish** that is rubbed into the maple.

With the patina of the oil-based product, says Kobe, "We've developed a look that hasn't aged." It's also an aesthetic that is deceptively simple—considering the mind-bending amount of research and meticulous craft put



Apple's new London shop offers one-on-one technical support at its "genius bar" (above, with stools) and an ample purchasing counter (top right). At the San Francisco location, precision-crafted maple display tables (middle and bottom right) conceal a complex network of cables and connectors, which are funneled through a spiral cord that drops to the raised floor.

into each piece—and that would be very difficult to replicate. This is no accident: Kobe maintains that his firm's relationship with Apple has lasted this long, in part, to preserve the strict secrecy his client demands regarding the formula to all of its products—including those that never leave the store. ■

Apple Computer Stores, various locations

client: Apple Computer—Ron Johnson (retail developer, principal in charge) **architect:** Bohlin Cywinski Jackson, Berkeley, California—Peter Q. Bohlin (design principal); Jon C. Jackson (principal in charge); Karl Backus (principal, project director); Joshua E Keller (project manager) **retail concept and fixture design:** Eight Inc., San Francisco—Tim Kobe, Wilhelm Oehl (principals in charge) **lighting consultant:** ISP Design **subcontractors and suppliers:** Fetzer's (display fixtures); Kikukawa Kogyo (stainless steel); Alkco Lighting, Modular International, Cathode Lighting Systems, Lutron Systems, Cooper Lighting (lighting)

ORGANIC IDEAS IN CONCRETE SHELTER

Earth-inspired dwellings still tend toward a cement-centric palette.

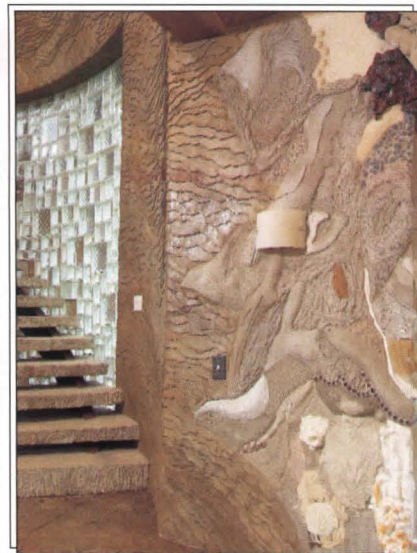
by C.C. Sullivan

Besides thermal mass, material plasticity and “stickiness” have attracted architects inspired by the natural world to a concrete palette. Much like the earth’s crust, concrete can express biomorphic solidity as well as the changeability of textures and particulate matter over time. From Wright’s **textile blocks** and Gaudí’s *trencadís* to midcentury organicism—practiced by Saarinen and Aalto, among others—and its recent revival, architects have pressed for an expanded range of material possibilities.

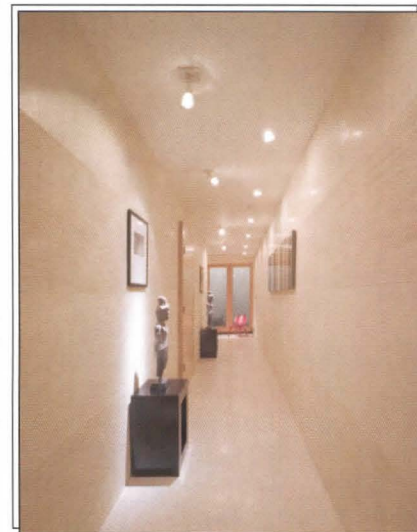
The responding evolution has taken two directions, mainly: the refining of surface treatments and the pairing of concrete with complementary, performance-oriented materials. In the last few years, the first category has seen a mini-explosion of finishes, masonry units, aggregates, “manufactured stones,” and **stamping and coloring techniques** (often identified by producers with the frequently suspect term “decorative”). As for the second area, emerging hybrid products have predominantly been wall and floor systems, but there have also been acoustical CMUs, novel cladding and rainscreen techniques, and quasi-structural combinations like insulating concrete forms, known as ICFs and, in some circles, “**i-forms.**”

This flourishing of choices has helped boost the use of concrete structures and finishes in residential projects. Over the last decade, concrete homes grew from 3 percent of the total housing market to more than 15 percent, according to the Portland Cement Association. And the costs hover between 2 percent and 4 percent above those for wood-framed dwellings—if ICFs are used.

A few extreme examples of the concrete shelter have been built recently, including a Gaudíesque showcase of thin-set mortar in Crete, Illinois (top right and left) and a demonstration project sponsored by the National Association



It might be called the “polymer-modified cementitious house,” based on the primary material used to hand-sculpt this idiosyncratic abode in Crete, Illinois: Walls, floors, countertops, and even doors were treated with paper-thin concrete coatings—many built up over dozens of trowel applications over several years—and enhanced with stains, inlaid objects, and “texture skins” that imprint shapes onto surfaces. (The materials, made by Madera, California-based Bomanite, were applied by the specialty contractor Everlast Concrete of Steger, Illinois.) One especially exuberant wall design derives from an aerial photograph of rice paddies in Thailand (above right); a stalagmite fireplace (above left) is cut through with a stenciled I-beam topped by a whimsical handrail fashioned from rebar.



A demonstration concrete house in Las Vegas reveals dozens of decorative and structural techniques, including masonry decks and plaster walls.

of Home Builders. The latter, located in Las Vegas, employs an ICF structure, three concrete flooring techniques integrated with decorative flourishes—including a **floating deck** that allows rainwater runoff below—and decorative concrete masonry, aggregate, and stucco. Ideal for its location, the 5,200-

square-foot house scores high on the EPA’s Energy Star rating system, due mainly to the low-permeability i-forms. Even more appealing, however, are the natural hues and varied textures of the interiors (above right), which include everything from simple split-face masonry units to plaster artistry.

Portland Cement Association Presents **Explore Unlimited Possibilities with Colored Masonry Mortars**

Colored mortars broaden designers' options



Photo credit: Jim Hedrich, Hedrich-Blessing, Chicago

The visual separation of the distinct areas on this facade is heightened by the use of mortars color-matched to the masonry units.

by Jennifer G. Prokopy



Architecture Magazine Continuing Education

To take the quiz and earn 1 AIA/CES Learning Unit (LU) of health, safety, and welfare, go to www.architecturemag.com, click on "Continuing Ed," and proceed to "Explore Colored Masonry Mortars" or turn to page 74. You must answer 70% of the questions correctly to receive credit for this course. This course requires online reading in addition to the following article in order to be able to take the quiz. Please allow 8 to 10 weeks for processing. See page 74 for details.

There are many reasons architects choose to design with masonry: durability, design flexibility, safety, and low maintenance are just a few. But without a doubt, the material's most attractive trait is its beauty. A designer using masonry possesses the ability to invoke the feel of an historic era, or to create an ultra-modern atmosphere; the option to create a monolithic wall or to explore a spectrum of colors and textures. Color plays a significant role in masonry applications, and colored masonry mortars can further extend the range of available design choices.

A SPECTRUM OF POSSIBILITIES: THE ROLE OF COLOR

When evaluating color, viewers examine three qualities: hue, intensity, and shade. Hue is the color described in its most basic form: orange or blue. Intensity is the degree to which the hue dominates the color. And shade is a measurement of its relative lightness or darkness. These three qualities, together with available sunlight, the context in which a structure is viewed, and personal preferences, shape perception of the finished product.

When working with colored mortars, it is important to create a mock-up before construction to ensure that all parties—the architect, client, mason—come to an agreement on the end result (see "Secret to Success," page 72).

Aesthetic diversity—Beyond simply choosing a colored mortar, architects can explore a range of choices in masonry units—including brick, concrete masonry units, and stone—in myriad shapes, colors, and styles. Design options are stretched further through the use of varied mortar joints. Concave and v-joints are the most durable options in most climates;

Learning Objectives

This article provides an overview of the skills needed to specify and install colored masonry mortars.

Key points include:

- Possess a greater knowledge of the aesthetic possibilities and applications of colored mortars
- Understand how materials selection and installation impact color
- Gain the skills to accurately and successfully specify colored mortars on future projects

Explore Unlimited Possibilities with Colored Masonry Mortars

Secret to Success: Mock-ups

A variety of factors influence the final outcome of a masonry project, and the criteria used to judge success can vary among project partners. We examine texture, classifying mortar joints as rough or smooth. We examine color, judging the final result on hue, intensity, and shade. We may view a finished project in direct sunlight, or at dusk. And we evaluate projects in context, juxtaposed against a strikingly different background, or sandwiched between buildings of similar style.

Add to these variables the subjective views of each discerning individual, and it's easy to see that what one may view as a gorgeous accomplishment, another may perceive as an aesthetic failure. Masonry sample panels, or mock-ups, can help establish agreement on appearance among all parties before a project is constructed. Mock-ups also measure viability of the project. The contractor should construct a sample panel in a way that is consistent with the project specifications, using the same materials, level of workmanship, curing, and construction and cleaning procedures.

Here are some guidelines to consider when planning a mock-up:

- Construct the panel in a safe area and retain for future reference
- All parties should view the mock-up at the same time, under the same conditions
- Include the mason in the evaluation process so he/she can offer explanations as needed
- Optimize the viewing environment, in strong but indirect sunlight if possible
- Evaluate the panel as a whole—take in the overall appearance, from a distance of 20 to 30 feet
- When differences in appearance are viewed from a distance, a close inspection should offer an explanation
- While evaluations are subjective, an open discussion usually results in agreement
- Use the experience to develop any special guidelines to ensure top quality when constructing the project

raked, grapevine, and extruded mortar joints help achieve specific looks. Mortar color can be matched to the units to create a uniform surface, or contrasted to emphasize the shape and size of the units. Color choices create structures that blend in to their surroundings, or stand out as dynamic landmarks.

Color as identity—For consumer clients, color choices reflect personal aesthetics and can be key in bringing their vision to life, even if that vision is simply to have a home that keeps up with the Joneses. Companies frequently use color choices in masonry to reinforce brand and reflect corporate identity; Target, Kmart, and Harley-Davidson are just three companies that use masonry to create instantly identifiable retail environments across the country.

White cement—White cement is often used as a base for light or brightly colored mortars. Typically it is pre-blended with pigments, although it can be mixed with pigments on the job site. Offering a light tinting base, white cement allows designers to achieve the broadest range of vibrant mortar colors, notably pastels and bright colors.

DECISIONS, DECISIONS: SPECIFYING MORTAR MATERIALS

There are a number of ASTM standards that regulate masonry mortar. The two most commonly used are C270—Specification for Mortar for Unit Masonry, and C780—Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry. To help use them correctly, the ASTM committee overseeing mortar recently created C1586—Standard Guide for Quality Assurance of Mortars, which offers an overview of C270 and C780. C1586 is one of seven other standards specifiers may need to review. Detailed information on standards is provided in the online reading material. Masonry mortars are most commonly created by mixing aggregate (sand), water,

and one of the following: masonry cement, mortar cement, or a mixture of portland cement and lime.

Sand—Both the texture and shade of mortar color are affected by sand. Sand that contains a high amount of clay or silt fines also affects the hue and intensity of a mortar joint. Color consistency is increased by securing delivery of all project sand at one time, from one source; if this isn't possible, a sample of the first delivery should be kept on hand for comparison with subsequent deliveries to ensure consistency.

Water—Water joins sand in defining mortar color. For example, various gradations of sand change the water demand of the mortar mix, which affects the texture of the joint surface.

Cements—Mortar color is also affected by the inherent color of the masonry cement, mortar cement, or portland cement and lime mix used. And as with sand, color uniformity is improved when all cement (and lime, when used) comes from one manufacturer. Cement manufacturers carefully control the color of their products to provide uniform appearance in the wall. When cement and water are combined, they form a paste that surrounds the sand particles; as the paste hardens, its color defines the resulting mortar. The higher the water-to-cement ratio, the lighter the mortar color.

Choosing which cement binder to use in the mix is often a decision led by economics and convenience. Masonry cements are most commonly used in the U.S., and are available in colors to help achieve consistency. No matter which cement is chosen, it must be specified according to appropriate ASTM standards by mortar type: N, S, or M. Detailed guidance is set forth in ASTM C270.

Pigments—Because pigments are ultra-fine, they have a significant impact on mortar color. Today, pigments are commonly supplied as pre-blended, colored cements or mortars, in bulk or



Portland Cement Association

bagged form, providing excellent uniformity of color from batch to batch. This is an improvement over traditional delivery methods, where pigments are supplied in powder or pellet form and mixed on site. Pre-blended products eliminate the mess and potential inconsistency of handling and proportioning these materials on the job.

A number of manufacturers offer custom color pigments in addition to their stock colors. In general, mineral oxide (typically synthetic iron oxide) pigments—which are compatible with masonry, mortar, and portland cements and with lime, and offer stability in finished mortar—are recommended.

ASTM C979-Standard Specification for Pigments for Integrally Colored Concrete establishes criteria for ensuring that pigments are appropriate for use in concrete. ASTM C270 requires that pigments used in masonry mortar meet ASTM C979.

PUTTING IT IN PLACE: PROPORTION, MIXING, AND INSTALLATION

Once construction begins, changes can have dramatic impact on mortar color. Consistent materials and proper procedures are essential when creating the mortar mix.

Proportion and mixing—Changes can have a cascading impact on mortar color. For example, a change in the aggregate ratio affects water requirements for achieving desired workability, which in turn affects the texture and color of a mortar joint. The same is true if proportions are changed when making a portland cement and lime mixture on the job: changes can have a major impact.

The best color results are achieved through use of pre-blended pigmented cements or pre-weighed pigment packages, and thorough, proper mixing is a must for achieving uniform color. Mineral oxide pigments added to site-mixed mortar should not exceed 10% of the weight of the cement used in the mortar.

Installation—During installation, three factors have the most impact on the end result: unit suction, tooling, and curing. When mortar is placed, some of its water is absorbed by the masonry units; just how much is determined by the water-retentive quality of the mortar balanced with the absorptive quality of the units. While the inherent rate of absorption of masonry units can not be changed, there are steps the mason can take to control unit moisture content for uniformity. For example, covering any masonry units stored at the job site will minimize variations from precipitation or other environmental influences.

Skilled tooling techniques are necessary to achieve desired color and texture of mortar joints. Pigments tend to concentrate on the surface of a mortar joint; proper tooling at the appropriate consistency is essential for uniform color.

Curing offers one last opportunity to optimize results. Variations in curing conditions can have slight, permanent effects on the color's shade. But for the most part, dramatic areas of lightness and darkness during curing—usually associated with varying levels of free moisture content in the mortar—equalize as moisture levels even out.

The power of a job well done—Clean-up work after construction often changes the look of mortar joints, sometimes dramatically. Careful workmanship by the mason—including steps taken to minimize drips and smears—means less potentially damaging clean-up work. Cleaning procedures are very important, and should be consistent with instructions provided by the manufacturers of the masonry units, cements, and cleaning materials, and should be tested on a mock-up before construction begins. ■

The Finished Product

For more detailed information about colored masonry mortars, contact the masonry department at the Portland Cement Association, or go online to www.cement.org/masonry for additional resources.

Photo Courtesy ESSROC Cement Corp.



At the Falls of the Ohio State Park in Jeffersonville, Ind., colored mortars and masonry units create a unique look for signage and structures.



Photos courtesy of Davis Colors



A side-by-side comparison shows how two different mortar colors can impact a finished structure.



Photo courtesy of Davis Colors

Match mortar color to masonry unit color for a cohesive look.

The following quiz includes questions derived from online material not included in this printed article. You are required to read the additional online material in order to take the quiz and complete this continuing education unit. Please go to www.architecturmag.com, click on "Continuing Ed," and proceed to "Explore Colored Masonry Mortars" for the additional information.

Test Questions

1. Which of these statements is not true?
 - a. A change in the aggregate ratio can affect the final color of mortar joints.
 - b. The inherent rate of absorption of masonry units affects the final color of mortar joints.
 - c. Variations in pigment content can have dramatic impacts on the final color of mortar joints.
 - d. Tooling techniques do not affect color of mortar joints.
2. White cement increases color consistency because:
 - a. Its light color offers the best tinting base for bright colors.
 - b. White cements are manufactured with color consistency foremost in mind.
 - c. White cement is often available pre-blended with color pigments.
 - d. All of the above.
3. Which of the following is not recommended when evaluating a mock-up masonry panel?
 - a. Plan to retain the panel for later reference.
 - b. Examine the panel from a distance to gain an overall view.
 - c. Schedule an entire viewing day so concerned parties can independently evaluate the panel when their schedule allows.
 - d. View the panel with the mason on hand to answer any questions about workmanship or materials.
4. C1586-Standard Guide for Quality Assurance of Mortars offers an overview of two important standards for specifying masonry mortars. These standards are:
 - a. C1329 and C91
 - b. C270 and C780
 - c. C270 and C91
 - d. C780 and C91
5. Which of the following statements regarding cement choice is not true:
 - a. Three options for cement binder discussed in this article are: masonry cement, mortar cement, and a portland cement and lime mixture.
 - b. Masonry cement is the most popular cement binder choice for mortars.
 - c. The inherent color of the cement used does not have an effect on the final mortar color.
 - d. All three mortar options may be specified according to ASTM C270 by Type: N, S, or M.

6. Which of these statements regarding mock-up panels is true?
 - a. It doesn't matter who makes the mock-up, as long as the project mason is on hand to view it upon completion.
 - b. The mock-up should incorporate a smaller proportion of pigment because of its size.
 - c. An optimal viewing situation includes strong but indirect sunlight.
 - d. A mock-up should be discarded after construction begins.
7. A working knowledge of C91-Standard Specification for Masonry Cement is valuable because:
 - a. Colored masonry cements offer an easy, reliable color delivery method.
 - b. Use of masonry cement is the only guaranteed way to achieve consistent color.
 - c. C270-Specification for Mortar for Unit Masonry requires the use of masonry cement in all mortars.
 - d. All six types of masonry cement are described in detail.
8. Of the four statements below, which is true?
 - a. Texture, hue, shade, and intensity of color can all be affected by sand.
 - b. ASTM C979 recommends that pigments comprise no more than 15% by mass of cement in mortar.
 - c. The water-to-cement ratio of a mortar mix has little to no effect on color.
 - d. Pre-blended mortar materials are available only in small bags.
9. Which joints are most durable in most climates?
 - a. Raked
 - b. Grapevine
 - c. Concave
 - d. Extruded
10. Which statement is true?
 - a. During manufacture, cements are closely controlled for uniformity of color.
 - b. Variations in gradations of sand do not change the water demand of the mortar mix.
 - c. Economics usually do not factor in to the choice of cement binder in the mortar mix.
 - d. The lower the water-to-cement ratio, the lighter the mortar color.



Portland Cement Association

Exploring Unlimited Possibilities with Colored Masonry Mortars

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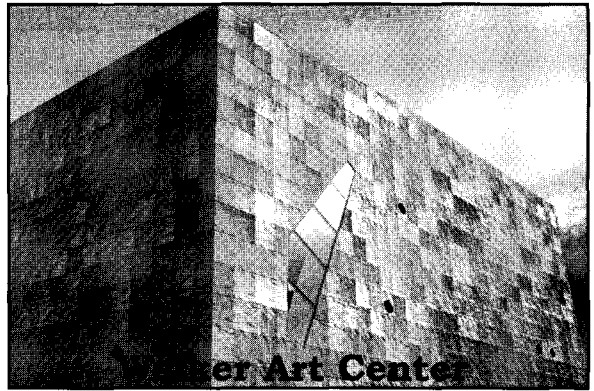
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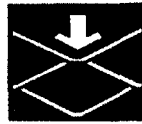
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PRINTWARE FOR THE POST-PLOTTER WORLD

New software and hardware for large-format printing bring architects systems tailor-made for any practice.

by Katie Gerfen

The A/E/C industry is rife with specialized technology needs, be they software or shareware. Now, get ready for printware. Large-format printing is a necessary evil in every aspect of the design process, from bids and presentations to final working drawings. Yet the latest generation of printers—calling one of today's machines a plotter is like insisting that CAD operators are "draughtsmen"—are not simply extensions of one's desktop computer; they are complex creatures all their own.

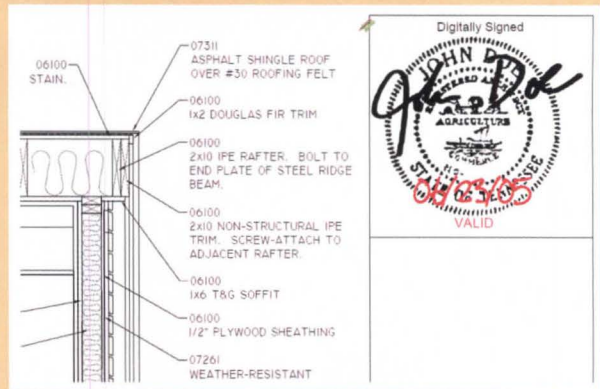
Companies that manufacture such large-format printers—like Canon, HP, and Océ—don't stop at hardware. Canon's recent releases come bundled with a suite of new applications, and Océ independently publishes its own **software packages** (see "The Plotters Thicken," page 77) to meet the special needs of design firms: There is photographic fidelity to be considered, color rendition for the presentation of finish choices, and the all-important job tracking so clients can be billed back for as much of the printing costs as possible.

But architects are also joining the trend toward online print sharing, says Sandy Gramley, a Designjet product manager at Palo Alto, California-based HP. "We've been seeing a real rise in the use of online plan rooms," notes Gramley, alluding to third-party service providers that allow designers, contractors, and clients to upload and download plans and print the drawings in their own offices. As an answer to this new wrinkle, HP joined with Autodesk (www.autodesk.com) to release "Instant Printing" this past May, which enables users to download the plans from a virtual plan room and automatically formats them for whatever HP model they are using. "We are not going to tell people where to print," says Gramley, "but we want to make sure that we are enabling them in whatever printing solution they choose."

PRINTING EASE WITH PDF

Many architects concerned with document security and accuracy are turning to alternative formats, such as Adobe's PDF (www.adobe.com). Many printers now have the capability of having a PDF document dropped directly to the printer driver, bypassing the need to open these large files through a reader, such as Adobe Acrobat, or through native programs such as Autodesk's AutoCAD. This direct-drop system can save time when printing several documents at once. The process is becoming so much more common that Acrobat is increasingly

DIGITAL SIGNATURE TOOL SATISFIES LEGALITY, AND LICENSING BOARDS



Electronic signatures have been used by the retail market for years, in the form of writing with a stylus on a digital screen to authorize credit card transactions. Now, with the development of Nashville, Tennessee-based LineType's plug-in for PDF documents called "Banjo," secure digital autographs are moving into the A/E/C industry as well. With this patent-pending program, architects are able to customize the appearance of their John Hancock, incorporating their stamp of registration, the date, and any other identifying material they choose. "Banjo was really developed for my own convenience," says inventor and architect John TeSelle. "I was trying to find a way to send out documents to my reprographics house without having to take the time to run down there and sign each one by hand."

Banjo is similar in many ways to other e-signature formats, such as the "Digital Signature" tool in version 7.0 of Adobe Acrobat. However, TeSelle claims that Banjo is the only program that is accepted by state licensing boards. "About half the states allow digital signatures [on contracts and plans], but no one had designed a program that the state boards accepted as totally secure," explains TeSelle, whose program automatically informs the architect if the document has been changed by unauthorized parties. Banjo marks each signature as "valid," "unable to be confirmed," or "invalid." The user can decide, through a clickable menu, whether the recipient of the document can see which rating the signature has received. Any unauthorized change to the PDF document will cause the rating to be marked immediately as invalid, thus insuring the integrity of the file.

Released in May, Banjo is only supported by Windows platforms. Macintosh compatibility is being considered by TeSelle, depending on demand from the growing user base. **Katie Gerfen**

➔ The Plotters Thicken

- product: **imagePrograf W6400, W8400**
- manufacturer: **Canon**
- web: **canon.com**

Able to print fine-line drawings and high-resolution photographs, this new series of large-format printers also features its own workflow software designed to facilitate the transition of data from hard drive to printer. The software connects with both Macintosh and Windows platforms and includes simplified page-setup menus. The W8400 is capable of printing on media up to 44 inches wide, whereas the W6400 can handle media up to 24 inches.



- product: **Designjet 4000, Designjet 70**
- manufacturer: **HP**
- web: **hp.com**

In both color and black and white, the Designjet 4000 (right) boasts double the print speed of other HP printers. The PostScript engine has a Pantone-approved color table built in to ensure accurate hues in critical presentation materials. The lower-cost Designjet 70 is more suited to users with low-volume printing requirements who need in-house oversized documents. Capable of printing on media from 4-by-6-inches up to the equivalent of half-sized drawings, the printer is small enough to fit on a table or very large desk.

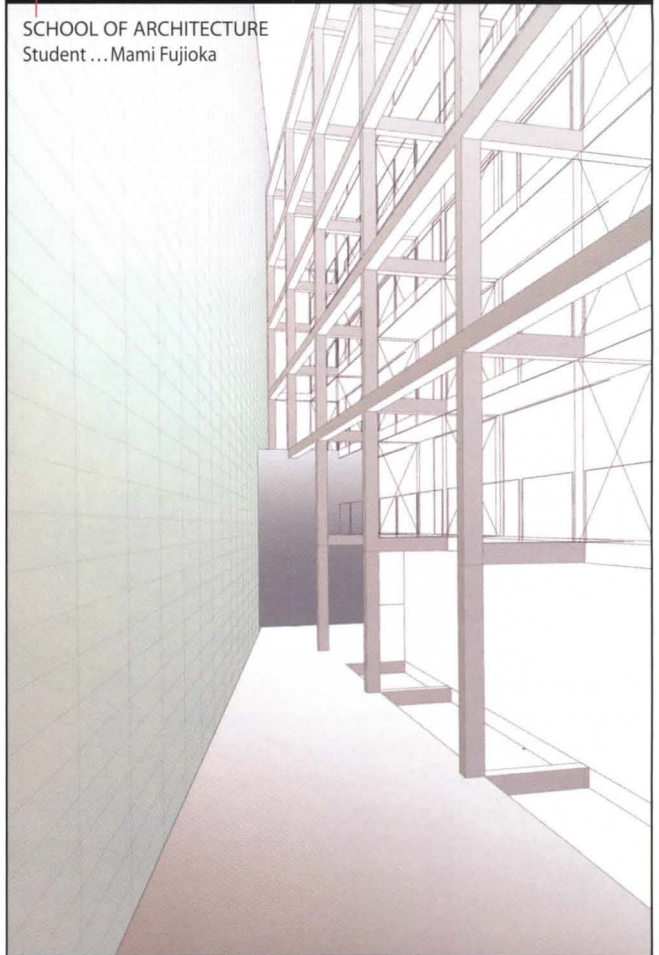


- product: **Repro Desk 2.0**
- manufacturer: **Océ**
- web: **oce.com**

The new version of Océ's workflow software has several features designed for the A/E/C industry: "Client Tools" automates the batch conversion of multiple file types within AutoCAD; "Plan Center" and "Drop Box" help send plans securely over the Internet; and "Repro Desk Professional" helps centralize printing management so that jobs can be easily tracked for billing and archiving.



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bundled into software packages accompanying large-format printers. Not to be left out of the architectural printing rat race, HP and Autodesk are slated to announce a similar drag-and-drop printing option for the San Raphael, California-based company's popular DWF format. (Rumor has it that DWF printing will be bundled in with HP's "Instant Printing" application.)

But Michael Folkers, a product manager for Acrobat who deals specifically with the A/E/C industry, cautions against complacency: "Many people think of Acrobat solely for PDF generation, but that's no longer true." Acrobat 7.0 Professional can incorporate varied formats into a single PDF, allowing files to be assimilated into one chunk for faster document generation. The latest version also includes "**public key infrastructure**," or PKI, security systems that allow architects to e-mail plans to clients for approval without permitting them to print the documents, maintaining the architect's control over the dispersal of copyrighted material.

In a move geared toward making PDF files even more applicable to the design community, Adobe is also working with HP and Océ to create a new set of standards, **PDF for Engineering**, or PDF/E, that will be a published reference document on how A/E/C clients can use this format to print. Because the standard will be open, it may help architects in archiving their work: By storing all files in PDF/E, architects can bypass the inherent problems of trying to access old project files on obsolete media: They will simply be able to open them in Acrobat.

REAPING THE REPROGRAPHIC REWARDS

Yet not all firms wish to take on the maintenance responsibilities or initial expense of their own large-format printers, which can run upwards of \$20,000 each. These customers often turn to **reprographics companies** such as San Francisco-based BPS (www.bps.com), a division of the nationwide American Reprographics Company. BPS leases printers to architecture firms and includes packages of paper, toner, and service together for a per-printout fee. This service is attractive to large and small firms alike, because the cost is based on each customer's individual usage. Jobs are completely trackable, with the benefit of a third-party invoice for clients, so printing costs for a project will not as easily come into question. Some firms even take the option of having their own "reprobot": an **on-site staff person**, incorporated in the usage-based cost, who is on hand to address service issues and to troubleshoot any errors.

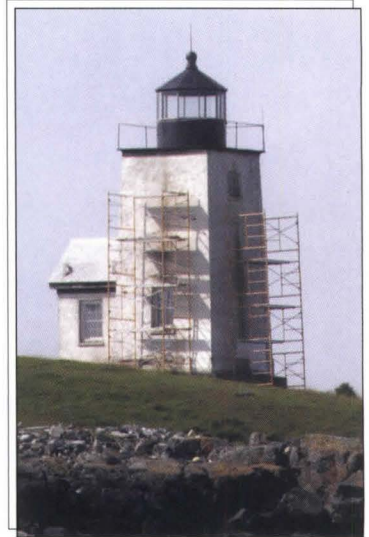
Roger Lackey, president of BPS, says that one of the major benefits is that as technology progresses, BPS will exchange old machines for newer ones at no additional cost: "We try to take a piece of BPS and put it in the customer's office." So whatever the size, scope, or volume of a particular firm's printing, there are many more options today for achieving high-quality, fast printouts.

☐ product: **Silin Masonry Paint**

☐ manufacturer: **Cathedral Stone Products**

☐ web: cathedralstone.com

A silica-based coating developed specifically for historic masonry structures, this paint bonds with existing stone to block water and mineral penetration. The finish helped save the Nash Island Light (right), itself a symbol of rescue for more than 130 years on Pleasant Bay near Bar Harbor, Maine. Made primarily of brick, the austere 36-foot-tall lighthouse had been treated previously with triple



coats of lime/mortar wash, which proved inadequate; by 1996 the Coast Guard had classified it a hazardous structure. The Maine Historic Preservation Commission later approved of the choice of Silin, which permits the release of water vapor, thus helping to prevent spalling and loss of mortar. The first two coats were applied in 2003, and the building's keepers say there have been no signs of wear since.

☐ product: **Dimensions Old World Plaster**

☐ manufacturer: **Dutch Boy**

☐ web: dutchboy.com

Whether the edifice is old or not, the traditional textures of Venetian plaster and European stuccoes can be simulated inside with this novel painting technique that, unlike the real thing, finishes to a smooth surface. The plaster look, which can be burnished to a specified sheen, is applied using a standard paint roller, so no specialty contractor or artist is required. A total of 30 colors are available for Old World Plaster, which is part of the maker's Dimensions line of numerous textured interior paints, metallic finishes, and tintable glazes.

☐ product: **Tuscan Villa Interior Plaster Finish**

☐ manufacturer: **Pratt & Lambert**

☐ web: prattandlambert.com

Similar to the Dutch Boy faux plaster, Pratt & Lambert offers a plasterlike finish in its Ovations line intended to conjure images of historic villas in Tuscany. The three-step application involves sponging and rag-rolling, yet it costs much less than actual plaster wall finishes, which can range from \$12 to \$18 per square foot. Among the 30 colors available in the Tuscan Villa range are such hues as Sunburnt Orange, Honeyed Spice, and the ominously named Road to Pompeii.



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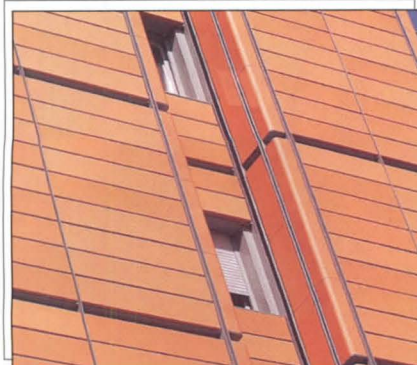
- ☐ product: **IceStone**
- ☐ manufacturer: **IceStone**
- ☐ web: icestone.biz

Made of 75 percent recycled glass, mixed with concrete, IceStone is a surfacing material suitable for interior walls, commercial floors, countertops, bathroom dividers, shower surrounds, and bathtubs. Offered in 1-1/4-inch-thick, 52-1/2-inch-by-8-foot slabs, the product can be shaped, cut with a water jet, and inlaid. There are 20 standard colors as well as custom hues. The material's recycled content—it is 99.5 percent inorganic, according to the manufacturer—makes it LEED-friendly.



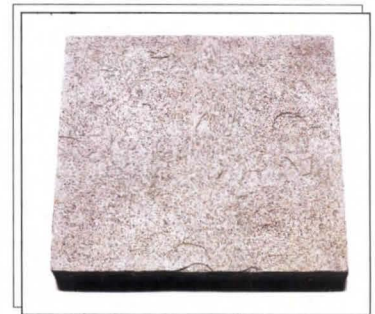
- ☐ product: **terra-cotta cladding**
- ☐ manufacturer: **Terreal**
- ☐ web: terreal facade.com

This French manufacturer of roofing, façade, and decorative terra cotta offers cladding panels of up to 5 feet long and 15 inches tall. The inert material is 100 percent recyclable. Single- and dual-skin modules are available, as are acoustically insulated façade and sunscreen systems.



- ☐ product: **stone veneer**
- ☐ manufacturer: **Owens Corning**
- ☐ web: owenscorning.com




Owens Corning has expanded the color palette of its Cultured Stone collection of pre-cast stone veneers and architectural trim products. Commonly specified in the design of fireplaces and other residential applications, the material is available in a wide variety of shapes, textures, and sizes that evoke the look and feel of natural stone. Chardonnay (top) and granite (right) have been added to the company's Hearthstone line, and Mackinac, which blends gray base colors and subtle pink tones with a rounded, tumbled-stone texture, has joined the River Rock series. The fade-resistant stones, which weigh 8 to 12 pounds per square foot, are cast in molds taken from natural stone surfaces.



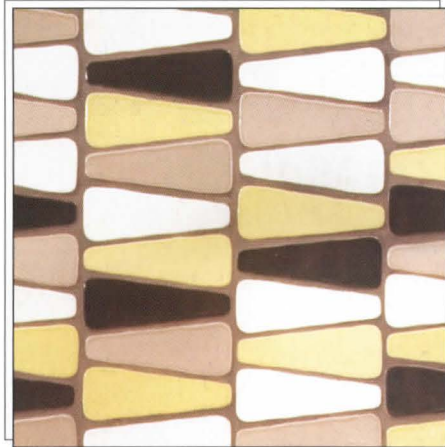
- ☐ product: **Montrachet**
- ☐ manufacturer: **Modulo**
- ☐ web: modulousa.com

A cast-stone veneer for interior wall applications, Montrachet is designed to echo the appearance of natural stone found in the Burgundy region of France. Made from crushed stone and mineral pigments, it can be specified in pieces 6-1/2 inches to 14 inches wide, 2 to 4 inches tall, and 1 to 1-1/2 inches thick; trim and corner pieces are also available. Modulo offers a complete system, including installation adhesives and grouting, and can be adhered to any rigid substrate, such as gypsum board; there is no need for wire lathe or scratch coat.



 product: **Angela Adams Collection**
 manufacturer: **Ann Sacks**
 web: **annsacks.com**

Couture tile manufacturer Ann Sacks has enlisted textile designer Angela Adams to create a collection of five new schemes. (This is her tile debut; Adams made her name with rugs, handbags, belts, and home accessories in organic geometric patterns.) Taking their cue from these textile fashions, her tile designs begin with basic forms and shapes and then abstract them. New products called “Manfred,” “Corice,” and “Mona” are cut or raised in relief, while “Spike” and “Kenga” are crafted through a graphic dry-line process, a technique in which lines are hand drawn and glaze is filled in between the patterns. A 4-inch-square tile, Manfred (top) is offered in three tone-on-tone variations inspired by the rounded tops and square bottoms of vintage radios and televisions, with their rabbit-ear antennas. When the three tiles are combined the effect is an abstracted, cascading droplet pattern. Corice (bottom), available in 4-inch or 6-inch tiles, was inspired by the irregularities found in nature. The color palette for Corice include chocolate, frost, citron, and graphite.



 product: **Metallica Collection**
 manufacturer: **Tau Ceramica**
 web: **tauceramic.net**



Spanish tile manufacturer Tau Ceramica has launched a glazed porcelain tile series with the texture and look of metal. Available in three hues, ranging from rusty steel to beige (above), “Corten” can be used on interior walls and floors, including medium-traffic commercial floors. In a metallic dapple gray, “Titanio” is intended for interior walls only. Each color is available in four sizes, ranging from 12-inch squares to 24-inch-by-48-inch rectangles. All tiles are rectified for tight grout joints. Bullnose and stair treads are also available.



 product: **custom tiles**
 manufacturer: **Heath Ceramics**
 web: **heathceramics.com**

The I-shaped tiles seen on this six-story mixed-use building in North Hollywood, California, were custom-developed according to a design by Palm Springs-based artist Jim Isermann as part of the Los Angeles Community Redevelopment Agency’s “1% for Public Art” program. The tiles are featured on the balconies and also in the lobby of this retail and residential project designed by DE Architects of Santa Monica. Each tile is created by hand, giving rise to slight variations in shape and intensity of glaze. Cost for custom tiles varies depending on use, size tolerances, manufacturing process, and quantity.



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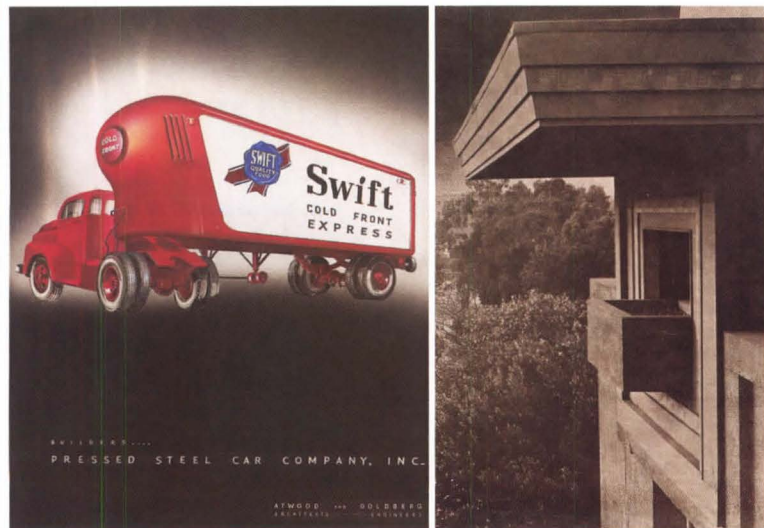
Materials Monthly | Princeton Architectural Press With Father's Day just passed, some oenophile dads are no doubt looking forward to the first installment in their gift-membership to the Wine of the Month Club. More down-home types might have received a year's subscription to Meat of the Month, which sends members a different kind of smoked meat in the mail every 30 days. But the bespectacled archi-dads (and -moms) out there may be more thrilled by the latest addition to this mail-order madness: *Materials Monthly*, a service dreamed up by the folks at Princeton Architectural Press that brings subscribers a sampling of innovative and unusual building matter, such as KnollTextiles' Imago, a translucent resin panel embedded with fabric. The swatches are handpicked by Los Angeles-based architect Jennifer Siegal, and arrive in a nifty little box complete with a set of informational cards and an accompanying three-ring binder. Longer-lasting enjoyment and certainly more surprise value than a necktie. **Anna Holtzman**



EXHIBITION

1945: Creativity and Crisis, Chicago Architecture & Design of the World War II Era | Spirit into Matter: The Photographs of Edmund Teske | The Art Institute of Chicago | Through January 8, 2006 American utopia circa 1945 centered on suburban expansion, prefab convenience, and personal travel, whether by air or the budding Interstate system. Postwar optimism wasn't giddy but instead fixated on technology, judging by the work of Chicago-area designers catalogued in this modest but worthwhile exhibition. As no-nonsense inventions like Bucky Fuller's Dymaxion Car and "Dwelling machines" vied with Hugh Ferriss's fantastic heliports and superhighways, the output tended toward manufacturer-moderne and emphasized the consumer. The industrial build-up's peacetime dividends included Richard Ten Eyck's Vornado fan and Henry P. Glass's Swingline furniture, as well as many factory and military reuse projects—works such as Bruce Goff's Quonset-hut chapel and Bertrand Goldberg's refrigerated trailers (below left).

That enthusiasm, however, eluded many Americans for whom the postwar years meant introspection. An exhibition on Chicago photographer Edmund Teske (below right)—just downstairs in the Art Institute but, unfortunately, closing this month—offers a pithy counterpoint. From the tender chronicling of Chicago's rowhouses (influenced by his training at Taliesin West) to his dreamlike figure studies, Teske's images reveal an artist's search for himself—one that only seemed to deepen: His later composite prints, surreally enlacing natural and human forms with streaking and color stains, express his faith in Hindu Vedantic philosophy. **C.C. Sullivan**



EXHIBITION

Taking Place: Photographs from the Prentice and Paul Sack Collection | San Francisco Museum of Modern Art | Through September 6 Place is an elusive idea, but photography is one of its best hunters—second, perhaps, only to architecture. *Taking Place* examines the relationship of location, photography, and architecture by means of hundreds of black-and-white images—many familiar masterpieces among them—representing a wide range of time periods and geographic regions. All come from the collection of Paul Sacks, a San Francisco real estate investor who has an unusual requirement for his art: Each photograph he purchases must include a building that he could ostensibly own or lease. With images taken over the last 150 years—some depicting structures dating back to antiquity—the exhibit becomes a visual history of modernism. Interestingly, the photographs race ahead of the architecture, revealing their medium's modernist tendencies far earlier than the buildings they illustrate—as in William Herman Rau's 1885 photograph of the Pennsylvania Railroad (below), which could be a collage by Le Corbusier, were it not for the gingerbread stationhouses. **Andrew Blum**



EXHIBITIONS

ATLANTA
Lighting Design: Creativity and Craftsmanship
 Innovations in everyday and cutting-edge fixtures by a variety of designers and artists.
 THE DESIGN MUSEUM
 museumofdesign.org
 Through August 20

BARTLESVILLE, OKLAHOMA
Building Images
 Seventy years of architectural views from the photographers of Chicago's Hedrich Blessing.
 PRICE TOWER ARTS CENTER
 pricetower.org
 Through July 31

COLUMBUS, OHIO
Vanishing Point
 An interpretive look at urban and suburban "nonspaces," such as malls and air terminals.
 WEXNER CENTER FOR THE ARTS
 wexarts.org
 Through August 14

GRAND RAPIDS, MICHIGAN
Petra: Lost City of Stone
 A travelling exhibition on the ancient Middle Eastern city carved out of cliffs by nomadic desert traders.
 CALVIN COLLEGE
 calvin.edu
 Through August 15

HELSINKI
From Wood to Architecture

An exhibition exploring the many roles of wood in contemporary architecture.
 MUSEUM OF FINNISH ARCHITECTURE
 mfa.fi
 Through September 4

LONDON
Wright to Gehry: Drawings from the Collection of Barbara Pine
 Original works by twentieth-century architecture icons.
 SIR JOHN SOANE'S MUSEUM
 soane.org
 Through August 27

LOS ANGELES
Renzo Piano & Building Workshop
 Sketches, models, drawings, and blueprints from the renowned firm.
 LOS ANGELES COUNTY MUSEUM OF ART
 lacma.org
 Through October 2

MINNEAPOLIS
Grand Salon from the Hotel Gaillard de la Bouexiere
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 THE MINNEAPOLIS INSTITUTE OF ARTS
 artsmia.org
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MINNEAPOLIS
The Shape of Time
 A chronological path through 50 years of art history, from postwar abstraction to "alternative modernisms."
 WALKER ART CENTER
 walkerart.org
 Through August 3

MONTREAL
Super City
 An installation exploring the power of building toys to shape children's perceptions of the built world.
 THE CANADIAN CENTRE FOR ARCHITECTURE
 cca.qc.ca
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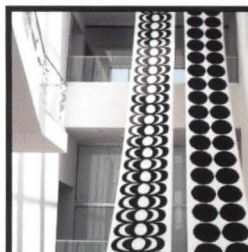
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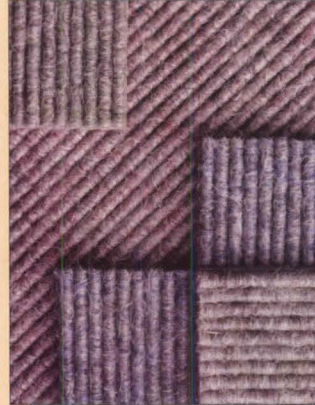
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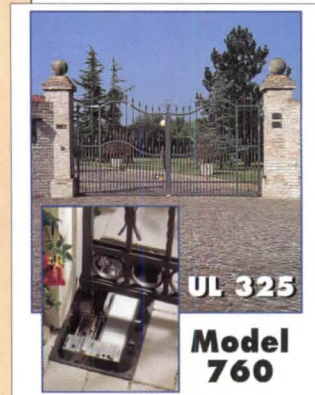
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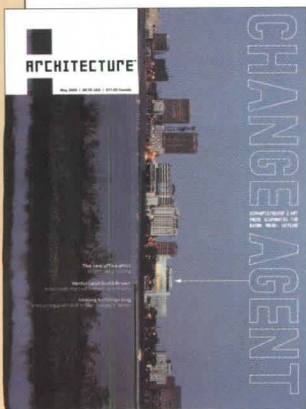


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RS #	ADVERTISER	PAGE
230	Academy of Art University	77
241	ARCAT	87
1	Armstrong World Industries	C2-1
101	Bartco Lighting	84
26	Belden Brick (East, Midwest)	36
79	Benjamin Moore	13
102	Biofit Engineered Products	84
9	Bobrick Washroom Equipment	18
55	Brick Industry Association	15, 17, 19
235	Cascade Coil Drapery	87
211	Eldorado Stone	39
100	Englert	29
45	Epic Metals	35
73, 104	Eurotex	14, 84
106	FAAC International	84
103	Gage Corporation	84
93	Green By Design	75
67	Haddonstone (USA) Ltd.	C3
71	Hanover Architectural Products	10
225	HDI Railing Systems	28
155	Hunter Douglass Contract	44
107	Invisible Structures, Inc.	85
66	Kepeco+	32
56	Lightolier	43
68	Marmomacc	25
74	MCA (The Metal Initiative Association)	2-3
92	Merchandise Mart Properties (NeoCon East)	30
154	Mohawk Industries	38
236	Multi-Housing World	79
108	Musson Rubber	85
6	NAAMM (Expanded Metals Manufacturing)	75
30	NALSA	8
8	Niles Expanded Metals	75
105	North Country Slate	84
226	Polytronix	34
-	Portland Cement Association	71-74
227, 109	Selux	33, 85
15	Spantex Expanded Metal	75
87	Sto Corp.	40
34	Temple	16
237, 111	Tile of Spain	26, 85
110	2thousand degrees	85
112	Vistawall	85
113	Walker Display	86
164	Wausau Tile	9
114, 250	Weather Shield	86, Back Cover

This index to advertiser page location is published for reader convenience. Every effort is made to list page numbers correctly. This listing is not part of the advertising contract, and the publisher is not liable for errors or omissions.

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FOR CHICAGO, AN ARCHITECTURAL FEAST—OR A FUNDRAISER?

BY EDWARD KEEGAN

Since 2001, a private exhibition has been on view at the Art Institute of Chicago. As its expansion plans by Pritzker laureate Renzo Piano have evolved, potential donors, political leaders, and members of the media have perused the schematic designs in behind-the-scenes gallery spaces within the museum. Just steps from the public galleries, the Italian architect's evocative sketches, models, and construction mockups have quietly played to an elite local audience.

In what initially seems like a laudable, democratically inspired gesture, many of these same items are now available for public scrutiny at the top of the museum's monumental main stair. Scheduled to run through October 2, *Zero Gravity: The Art Institute of Chicago, Renzo Piano, and Building for a New Century*, opened on May 31 as part of a day-long series of public-relations events touted as a "groundbreaking" for the new building. But the exhibition has an ulterior motive—fundraising—that raises questions about its curatorial value in a museum context.

ENTICING VIEWS

Five detail models and three site models provide a compelling glimpse of the proposed building and a few of its public spaces. Large-scale drawings are suspended from the gallery ceiling. Center stage, a sprawling wood table presents preparatory sketches and concept models. Three sets of the project's working drawings are available for visitors to inspect. The overall effect is refreshing,



office for an elaborate presentation of a big project.

But the most exciting models—those through which Piano explored various forms for the sleekly aerodynamic fins of the proposed building's "flying carpet" roof canopy—are shown only in photographs. Earlier visitors to the private showing of Piano's work, myself among them, were treated to a series of these delightful artifacts. Also featured prominently in renderings and models is Piano's most recent addition to the museum design, a 900-foot-long footbridge connecting the building to Millennium Park. Yet this element is missing from the construction drawings, and museum officials have been careful to modify their description of the bridge as "proposed."

Most conspicuously absent from the show is the place of this expansion design within Piano's oeuvre, presented solely through a single copy of a large, newly published monograph that's attached to the tabletop in the center of the exhibition. Not surprisingly, it's available in the museum's gift shop for \$125.

DONATIONS, PLEASE

The exhibition leaves the visitor with the uneasy feeling that its primary purpose is commercial rather than curatorial—the promotion of the new building's design and its still incomplete fundraising.

Exhibitions about the process of architecture are appropriate, even necessary, parts of the public discourse—especially in a place like Chicago, where audiences are hungry for smart exhibitions about almost any topic related to design. But

it's about a project that still needs substantial donations in order to be built. As chairman of the museum's board of trustees, former Sara Lee CEO John Bryan has the unenviable task of rounding up the final \$115 million before construction of the building can proceed.

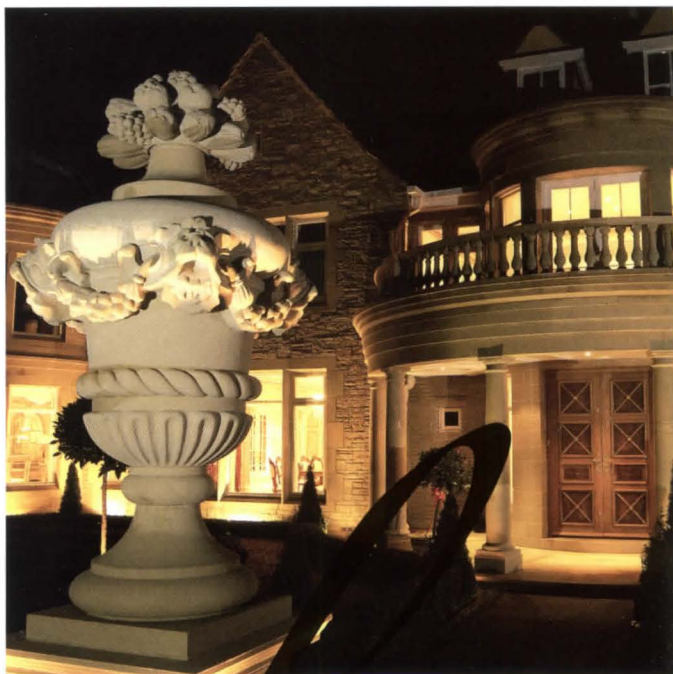
Make no mistake: The Art Institute's plans are not small ones. (Daniel Burnham would have approved.) And I remain a staunch advocate of Piano's scheme. The building will be a bold, compelling addition to Chicago. But the Art Institute compromises its role in the city's architectural community with *Zero Gravity*. Because the institute prides itself as being a world-renowned encyclopedic art museum, it becomes essential that this important civic institution be up-front about an exhibition that primarily serves its own needs.

The citizens of Chicago do need to know more about this new structure and Renzo Piano and, at the very least, the exhibition does accomplish these limited goals. But a more appropriate—and curatorially sound—strategy would have been to mount a retrospective of the architect's extraordinary career. Visitors could then have seen the Art Institute's proposal as part of Piano's evolving series of museum designs. *Zero Gravity* could have been an opportunity to educate the museum's audience about its current venture in a broader context, rather than simply rattling a tin cup for much-needed construction funds.

Edward Keegan is an architect, critic, writer, and public-radio commentator

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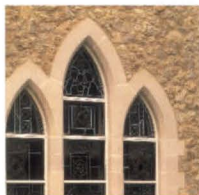
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