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Where are the Women?

In architecture firms, the glass ceiling for women is reinforced with steel.

Here we go again. Kohn Pedersen Fox Associates' recent announcement of its new principals (pages 102-107) confirms architecture's longstanding exclusionary practice: The firm promoted five white men and no women. KPF has no excuses: 48 of its 127 employees are women, including three female senior associate principals who have realized some of the firm's best buildings.

KPF is not alone. Ellerbe Becket has four female architect vice presidents out of 70; SOM has only two female partners out of 26; and none of NBBJ's 10 partners are women. Despite the steadily increasing number of women in the profession—9.56 percent of current AIA members versus 7.66 percent in 1992—female architects are still not making it to the top.

Six years ago, when we devoted an issue to women in architecture (*Architecture*, October 1991), the picture seemed more promising: Women were entering the field in record numbers; more women were joining architecture school faculties, including several female deans; and a growing number of women held management positions within large firms.

In that issue, we profiled eight women in corporate firms who seemed to represent the next generation of partners. Recently, we contacted the eight to find out what had happened to them. The news was depressing: Only one had advanced in her firm, but she was already a principal. Most had changed firms but had not gained more senior positions. One had retired and one had been laid off.

Government data confirm the bad news for female architects. The United States Bureau of Labor Statistics reports that women now comprise 57 percent of the U.S. workforce, but only 17 percent of the architectural workforce. In contrast, nearly 30 percent of the nation's attorneys and judges are women. Women account for more than 43 percent of executives, managers, and administrators nationwide.

A truly accurate picture of where women stand in architecture, however, is nearly impossible to assemble, since the American Institute of Architects doesn't compile statistics on job types and employee gender within its member firms.

One fact remains certain, however: Progress for women in architecture is entirely too slow. It's time the profession started taking a hard look at its employment and promotion practices, and figured out ways to change them.

Gender equality should top the profession's agenda. It should not be limited to yearly AIA diversity conferences organized and attended by the disenfranchised and ignored by the profession's patriarchy. Without diversifying its leadership, architecture will continue to lose ground to related disciplines and lose talent to professions that better reward women's achievements.

At a time when affirmative action is being challenged in the courts and the wage gap between men and women is widening, it is paramount that the profession take the initiative to promote women from within its ranks. Without internal change, the stereotype of the profession as an exclusive men's club will continue to persist. Architecture will become, as many have predicted, an irrelevant discipline, out of touch with its clients and its aspirations.

Deborah K. Dietsch

Project Outline

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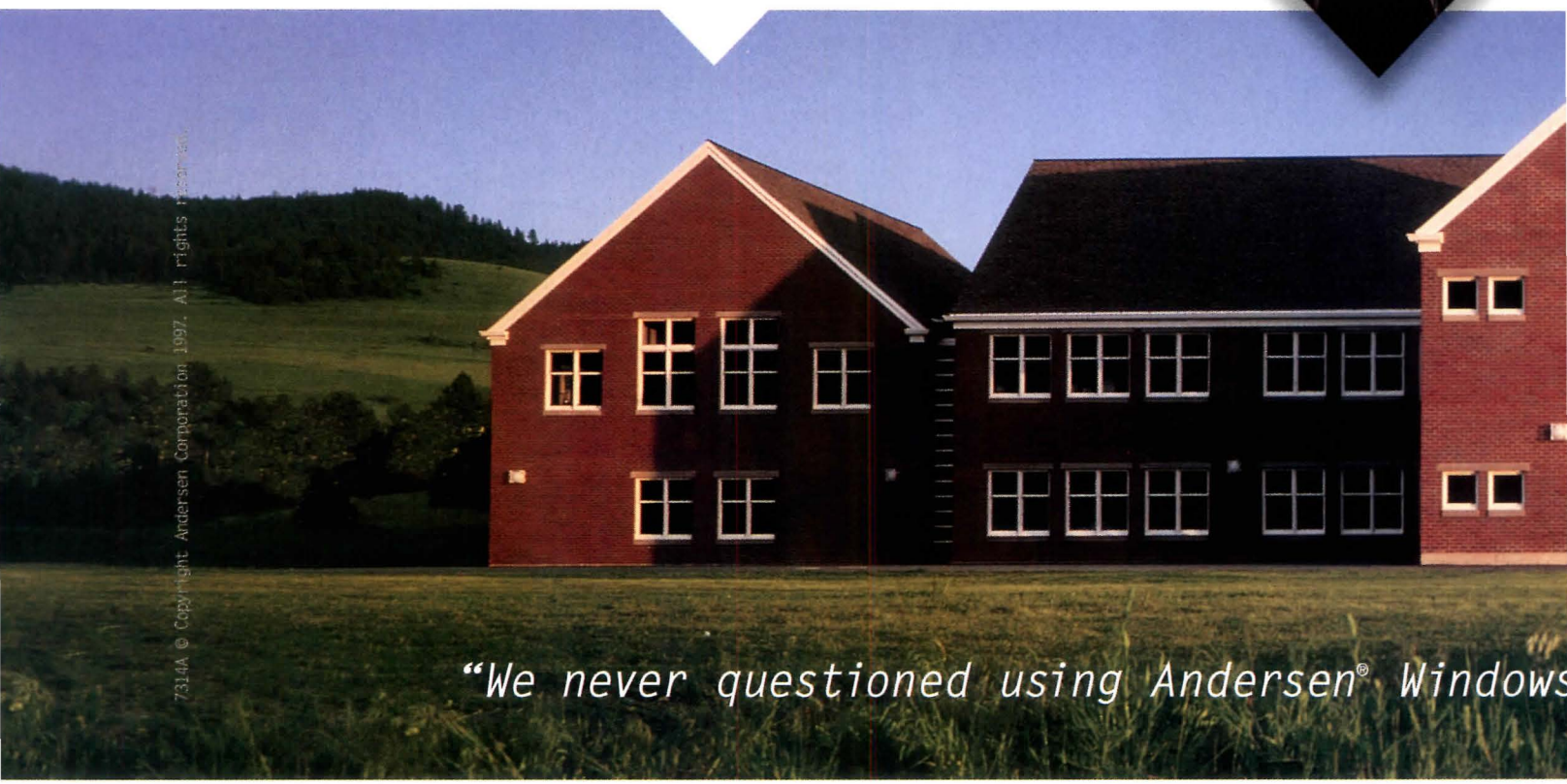

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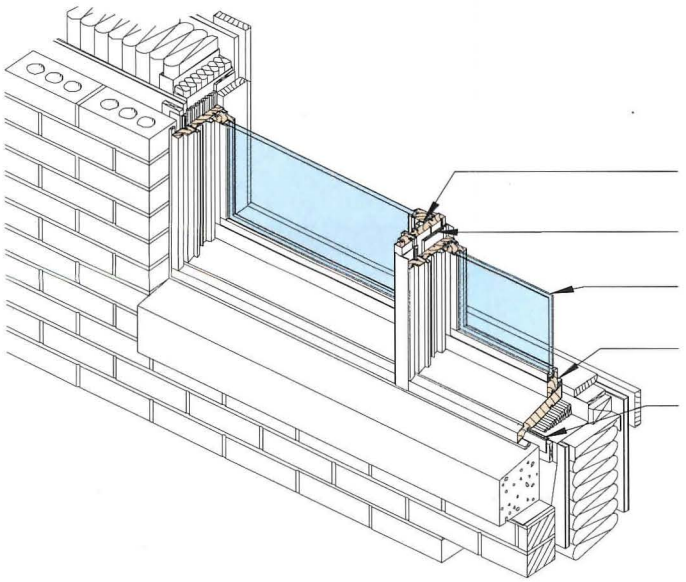

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Credible coverage

Your magazine is holistically informative and stimulating. Keep providing articles covering the entire range of issues challenging architects in the 1990s and beyond. Many articles I read accurately refer to the need to reestablish the credibility of the profession in the eyes of the "smaller person." We can provide a creative solution to many structural and environmental issues, but need to convince folks that responsible creativity is not only important, but critical, to society's propagation of the value of habitable space.
Rich Grinnell
Tampa, Florida

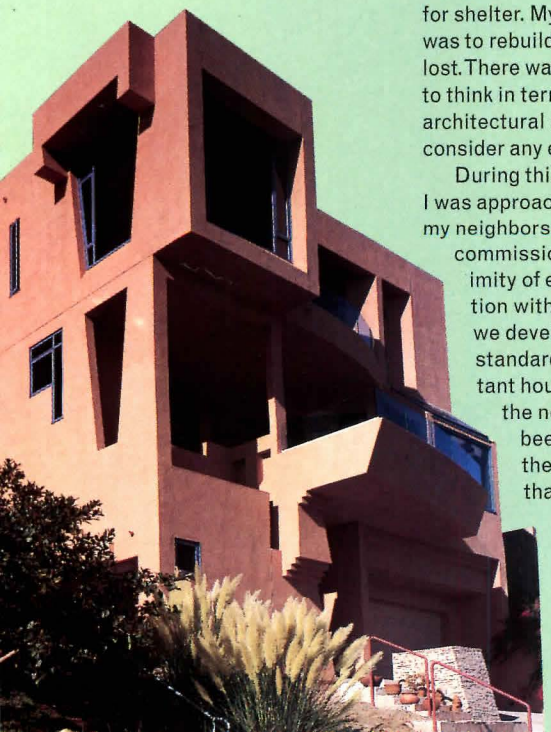
Software help

Our reliance on computers increases every day and the smorgasbord of software available to architects has not made the transition an easy one. Your articles have cleared up a lot of the ambiguities that have plagued architects during this time. Thank you.
Frank Kholousi
Archi + Tectonic
Omaha, Nebraska

Fire recovery

As an architect and fire victim, I read your article, "Fire Starter" (*Architecture*, August 1997, pages 106-111), with great interest. When the 1993 firestorm destroyed my house and studio in LaCosta, a hillside mix of styles and materials, I felt overwhelmed by the need for shelter. My immediate impulse was to rebuild exactly what I had lost. There was little opportunity to think in terms of making an architectural statement or to consider any experimentation.

During this recovery process, I was approached by a number of my neighbors and accepted seven commissions within close proximity of each other. In conjunction with the City of Malibu, we developed neighborhood standards. Each of the resultant houses is a piece of what the neighborhood had once been. In working with these clients, I learned that I, too, could not just rebuild what I had. As a matter of emotional and creative necessity, it had to be a moment to experiment. The solutions I arrived at, including my new house and studio (bottom left), share a common concept of space, but are as diverse as the clients and their sites demanded.
A. Thomas Torres
Malibu, California



Holy grail

When I was in college in the 1970s, the holy grail of architects was organic, natural, single-family houses that used no energy. It took until the 1990s for this grail to be found—by an engineer no less. Architects should check out the Enertia homes (www.enertia.com) that are revolutionizing single-family dwellings—adding sustainable, environmental, and renewable to the grail.
Emily J. Will
Raleigh, North Carolina

Poetic solutions

Thank you for giving well-deserved attention to the work of Auburn University's Rural Studio (*Architecture*, August 1997, pages 90-93). Architects have become an exclusive service, maybe even an extravagance. In 1995, only 2 percent of new homebuyers worked with an architect. The Harris House illustrates that custom design is not an issue of cost, just careful consideration of a family and their needs. If there is hope for architecture as a broad-based profession, it is represented in this work, which gives us hope for such poetic solutions to community needs of the future.
Bryan Bell
Director, Design Corps
Gettysburg, Pennsylvania

Housing skills

HUD Secretary Andrew Cuomo (*Architecture*, August 1997, pages 44-49) was 6 years old when I designed my first HUD project and I learned that people seeking public housing lacked the skills to earn a decent living. Secretary Cuomo should study the benefits of the apprentice system that allowed me to grow and survive in the Hunts Point section of the Bronx, gaining skills that allowed me to become a prominent architect and designer of many successful HUD projects.

Contractors are eager to employ young apprentices for the building and maintenance of our communities. Apprenticeship will allow children to earn as they learn skills to pass on to others, will end homelessness and the housing dilemma, and return us to the pursuit of the American dream.
Victor L. De Nigris
Tucson, Arizona

Editorial contrast

In "Housing Without Architects" (*Architecture*, August 1997, pages 78-81), Witold Rybczynski points out that architects emphasize exterior appearances while homebuyers value interiors more strongly. This article is followed by pages of exterior photographs and only a few small, illegible floor plans. Is it intentional or simply ironic that you reinforce this contrast between architects' housing and the actual market values with your editorial content?
Christopher R. Shepherd
Armstrong Molesworth
Shepherd Architects
Toronto, Ontario, Canada

Out of touch

Raul Barreneche's review of three Will Bruder buildings in Jackson, Wyoming (*Architecture*, September 1997, pages 100-107), seemed to suggest that what he thought was great was considered an eyesore by Jacksonites. Conversely, what the locals loved and appreciated was deplored by Barreneche. Has architectural criticism become so out of touch with prevailing tastes and attitudes? After all, the purpose of architecture is to provide visual pleasure and utility. Perhaps exploring why the two buildings (the third, apparently, passed all tests) appear to have confused critical opinion and popular acceptance would have made a more engaging article.
James A. Gresham
Tucson, Arizona

Auburn alum

Your notice of Paul Rudolph's death (*Architecture*, September 1997, page 89) didn't mention that he attended Auburn University. It was rumored that Rudolph used to deny having attending Auburn, *perhaps with good* reason.
Robert O'Reilly
Kent, Alabama

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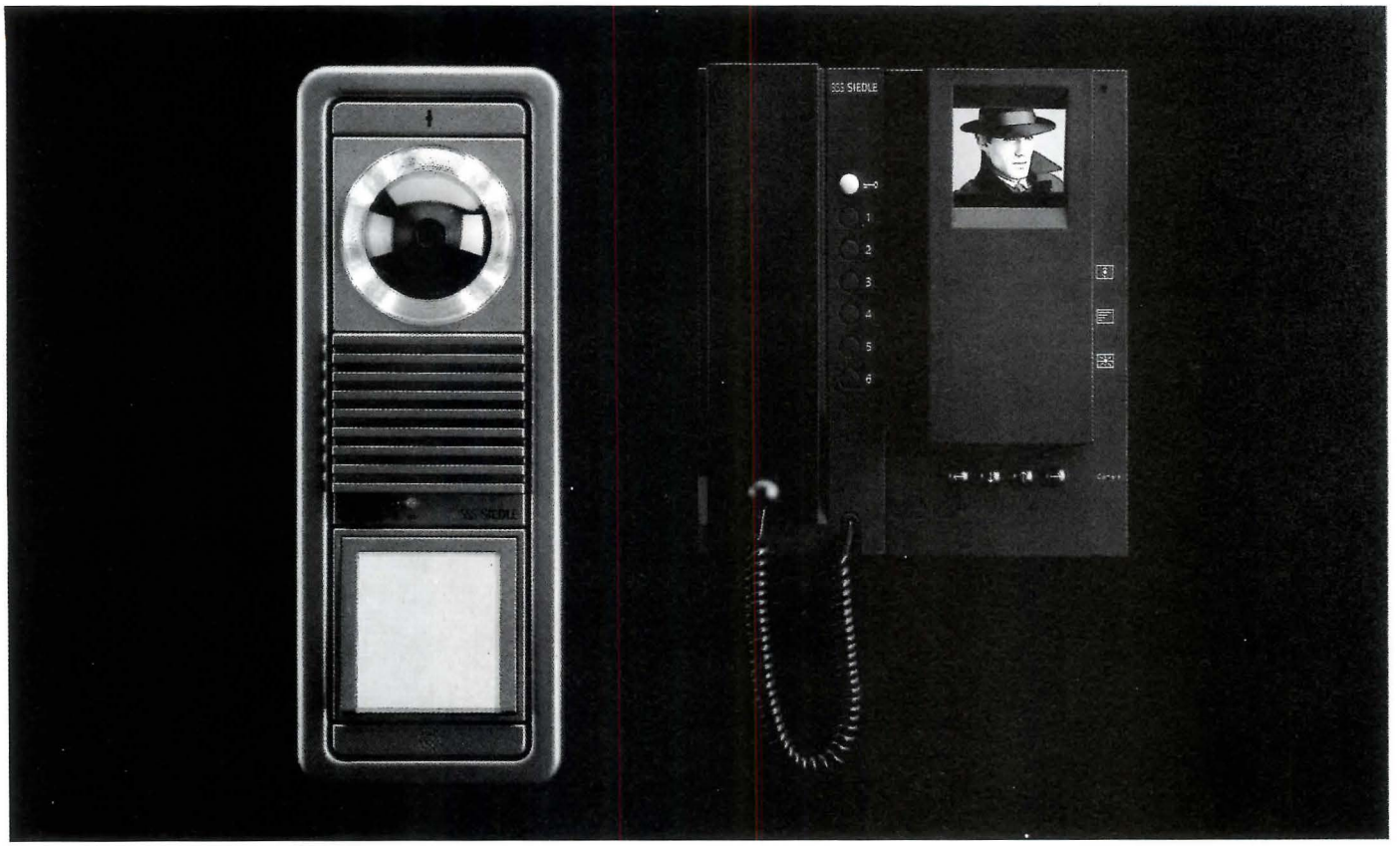

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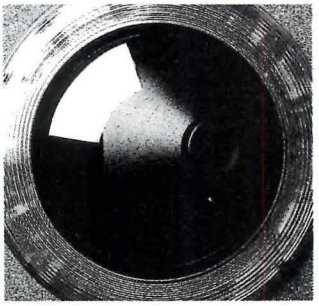

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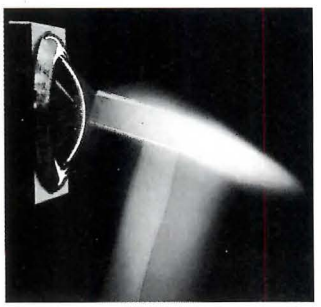

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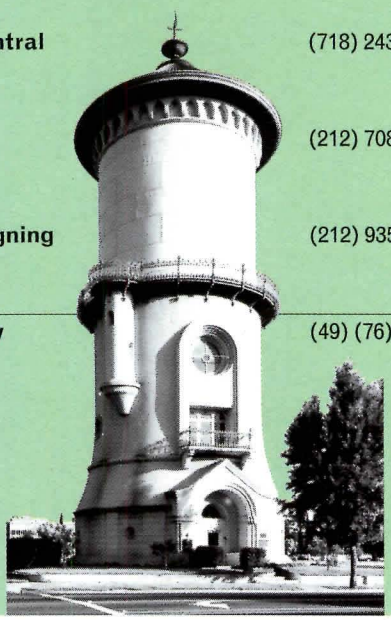
exhibitions

city	dates	exhibition	contact
Chicago	through November 30	**The Architecture of George Washington Maher** at the Chicago Architecture Foundation	(312) 922-3432
New York	through December 5	**Joze Plecnik and Prague Castle** at the Cooper Union, sponsored by the Czech Center New York	(212) 288-0830
	through December 30	**Building to Last: The Restoration of Grand Central Terminal** at the New York Transit Museum	(718) 243-3060
	through January 6, 1998	**Achille Castiglioni: Design!** at the Museum of Modern Art	(212) 708-9400
	December 11-February 8, 1998	**The Bronx Community Paper Company: Designing Industrial Ecology** at the Municipal Arts Society	(212) 935-3960
Weil am Rhein	through January 4, 1998	**The Work of Charles and Ray Eames: A Legacy of Invention** at the Vitra Design Museum	(49) (76) (21) 702 200



George Washington Maher's 1893 water tower and library in Fresno, California, on view in Chicago

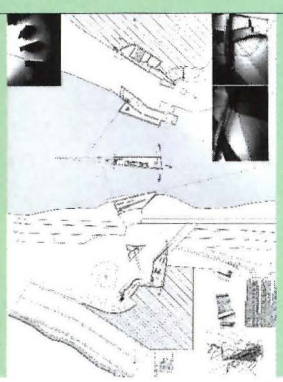
conferences

city	dates	conference	contact
Boston	November 18-20	**Build Boston,** sponsored by the Boston Society of Architects	(800) 544-1898
Clearwater	December 7-11	**Thermal Performance of the Exterior Envelopes of Buildings International Conference,** sponsored by the U.S. Department of Energy	(423) 576-7942
Dallas	January 16-19, 1998	**International Builders' Show,** sponsored by the National Association of Home Builders	(202) 861-2191
Minneapolis	November 20-23	**Learning from the Mall of America symposium,** organized by the Weisman Art Museum	(612) 625-3850
Orlando	January 17-21, 1998	**World of Concrete exposition**	(888) 562-4962
San Diego	November 20-23	**Symposium on Healthcare Design,** sponsored by the Center for Health Design	(510) 370-0345

Mall of America symposium features keynote speakers Karal Ann Marling and Rem Koolhaas.

competitions

competition	deadline	contact
Tilt-Up Concrete Association Achievement Awards	November 14	(319) 895-6911
Architecture and the Eradication of Poverty, sponsored by UNESCO and the International Union of Architects	November 15 (registration)	(33) (1) 45 24 36 88
Brunner Grants, sponsored by the AIA NewYork Chapter	November 15	(212) 683-0023
Environmental Design Awards, sponsored by the Environmental Design Research Association	November 15	(405) 330-4863
Rome Prize fellowship competition, sponsored by the American Academy in Rome	November 15	(212) 751-7200
Rotch Travelling Scholarship, sponsored by the Boston Society of Architects	January 2, 1998 (request for applications)	(617) 951-0845



Andrew James Davis won 1997 Rotch Travelling Scholarship with bridge design.

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SAUDI SKYSCRAPER

Ellerbe Becket and Omrania & Associates have designed what will be the tallest building in the Middle East, the 984-foot-tall, 3.3 million-square-foot Kingdom Centre in Riyadh, for billionaire Saudi Prince Alwaleed. The high-rise, which broke ground earlier this year, incorporates a three-story retail mall at its base. The mall's top level is reserved for women, allowing them to shop without wearing the veils required by Muslim law.

BERTRAND GOLDBERG REMEMBERED

CURTIS G. STAIGER

Modernist Bertrand Goldberg, famed for his advocacy of mixed-use development and structurally expressive concrete forms, died in his hometown of Chicago on October 9 at the age of 84. Goldberg's best-known design is Marina City (1966), the housing, office, retail, and entertainment complex on the Chicago River whose pair of cylindrical concrete towers are a nationally recognized landmark (right). In the 1930s, Goldberg studied at Harvard University, at the Bauhaus under Ludwig Mies van der Rohe, and at the Armour Institute of Technology (now the Illinois Institute of Technology), but never took a degree. The architect established his own practice in Chicago in 1937, and despite his education, stepped out from Mies's looming shadow. Projects in Chicago such as Marina City and River City (1987), a partially completed complex further south on the Chicago River, demonstrate not only Goldberg's iconoclastic proclivity for curves and concrete, but also his ongoing advocacy of mixed-use downtown development. *Ned Cramer*

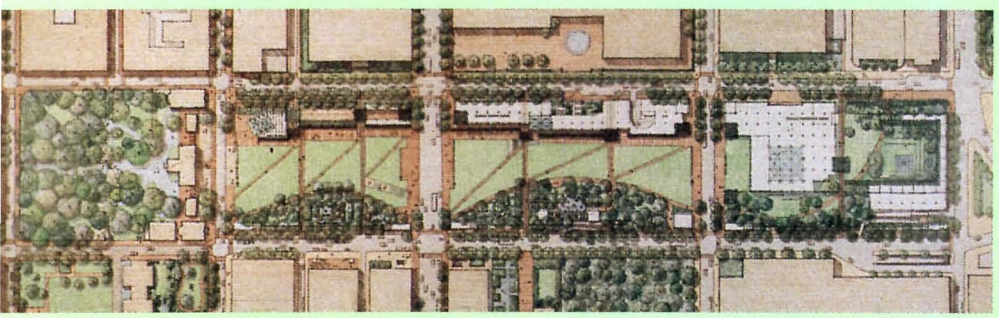
GEOFFREY NICHOLSON © HEDRICH BLESSING

BOSTON MALL MAKEOVER

Lafayette Place Mall in downtown Boston has been closed since 1992, doomed to retail failure by its forbidding brick exterior, confusing interior, and lack of anchor-store tenants. But with the upswing of the city's commercial real estate market, developer Patriot Games is scrambling to convert the abandoned mall, designed in 1984 by Mitchell/Giurgola, into a 600,000-square-foot office building. Cambridge-based ADD Inc is doubling the 350,000-square-foot mall's height to six stories, and converting all but 75,000 square feet of ground-floor retail to office space. To assert the complex's presence in the downtown shopping district, the firm is recladding the exterior in red brick, and orienting the remaining stores toward the street (right). Tenants start moving in next year, leaving less than 12 months for construction. "We've never turned anything around so fast," marvels ADD Inc Partner-in-Charge Larry Grossman.

New York developer Millennium Partners is already planning a 1.4 million-square-foot, mixed-use development across the street, designed by Gary Edward Handel & Associates (*Architecture*, October 1997, page 41).

INDEPENDENCE MALL UPGRADE



A new plan by landscape architect Laurie Olin of the Olin Partnership and architect Bernard Cywinski of Bohlin Cywinski Jackson promises to revitalize Philadelphia's forlorn Independence Mall, home of the Liberty Bell and Independence Hall. Olin and Cywinski propose three new buildings along the park's three-block-long western edge: a new shelter for the Liberty Bell to replace Mitchell/Giurgola's 1976 pavilion; a $30 million visitor and study center; and the $120 million National Constitution Center museum, which will terminate the Mall's axis on the north.

The National Park Service, which administers the 15-acre Mall site, unveiled Olin and Cywinski's $170 million proposal last month. The project team also includes urban planner Kise Straw & Kolodner, transportation planner Urban Engineers, interpretive planner History Now, preservation specialist John Milner Architects, and project manager International Consultants.

Despite support for the proposal from local politicians and the press, former Philadelphia Planning Commission Director Edmund N. Bacon has conducted an outspoken campaign to block changes to the park that he helped create in the 1950s and 1960s by demolishing over 500 historic buildings in Philadelphia's Center City. Bacon's underutilized Mall has since been derided for overwhelming the small scale of Independence Hall, prompting a 1996 study commissioned by the Pew Charitable Trusts from Venturi Scott Brown Associates (VSBA). VSBA did not respond to the Park Service's December 1996 request for qualifications, which resulted in the selection of the Olin team.

At a public presentation of the Olin project, the 87-year-old planner complained, "There is not a single idea in the whole damn thing." Of Bacon's complaints, Park Service Associate Regional Director David Hollenberg sighs, "There's a lot of Bacon in Olin's plan, but sadly, he doesn't see that."

The city and the Pew Charitable Trusts have both promised $10 million towards the realization of Olin's plan, but Pew's pledge is contingent upon matching funding from the state. A bill is now making its way through the Pennsylvania legislature to help fund the Mall renovation. The Park Service anticipates determining a construction schedule and selection process for the architects of individual buildings later this month.

L.A. MUSEUM CANOPY

The Los Angeles Museum of Contemporary Art has a new entrance canopy, designed by the building's original architect, Arata Isozaki. Completed in September, the canopy shelters the sunken courtyard outside the museum's main entrance. The delicate tensile steel structure, fitted with panes of fritted glass, was designed with the late structural engineer Peter Rice of Ove Arup & Partners.

FRED STOCKER

JFK'S NEW TERMINAL

John F. Kennedy International Airport in Queens is notorious for its ramshackle facilities, *built piecemeal* by individual airlines and the Port Authority of New York and New Jersey. But the airport's next addition, a $1.2 billion international terminal designed by Skidmore, Owings & Merrill, may be a significant improvement. It's the first terminal in the U.S. to be developed and operated by a private group, other than an airline: New York City developer LCOR; Schiphol, owner and operator of the Amsterdam airport; and the Lehman Brothers investment group. Upon its opening in the fall of 2001, the 1.5 million-square-foot, 16-gate terminal will replace the 1957 International Arrivals Building and accommodate 35 percent of JFK's international flights. The facility will also include a five-block-long retail concourse and a light-rail link to the New York subway system.

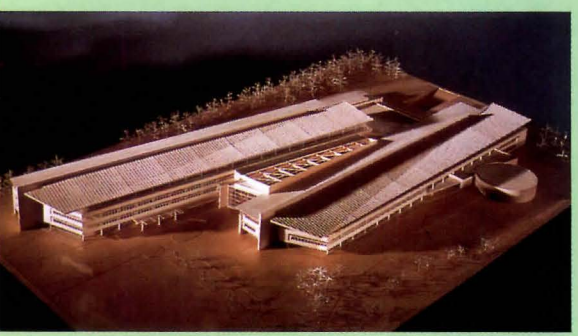
JOCK POTTLE/ESTO

THE BUZZ

Microsoft mogul **Bill Gates** held an 800-guest bash on October 3 to celebrate the completion of his multimillion-dollar house outside Seattle, designed by **James Cutler** and **Bohlin Cywinski Jackson** (BCJ), with interiors by **Thierry Despont**. With the Gates house finished, BCJ is now designing a $39 million laboratory at the University of California, San Diego.

San Diego architects **Renée Davids** and **Christine Killory** relocated to the Bay Area this summer, and have set up shop in San Francisco. The couple has designed a house in the Berkeley Hills, which should break ground next spring.

Perkins & Will's W.W. Grainger headquarters



With more than 100 of its members based in Hong Kong, the AIA is opening a chapter in the former British colony. The **AIA Hong Kong** chapter is the Institute's third overseas branch, joining AIA London and AIA Continental Europe, based in Paris. The AIA has also named a new public director, Milwaukee Mayor **John Norquist**, to serve on its board of directors for the next two years.

Outside of Chicago, **Perkins & Will** has designed a new 800,000-square-foot headquarters for motor parts distributor W.W. Grainger, scheduled for completion in 1999.

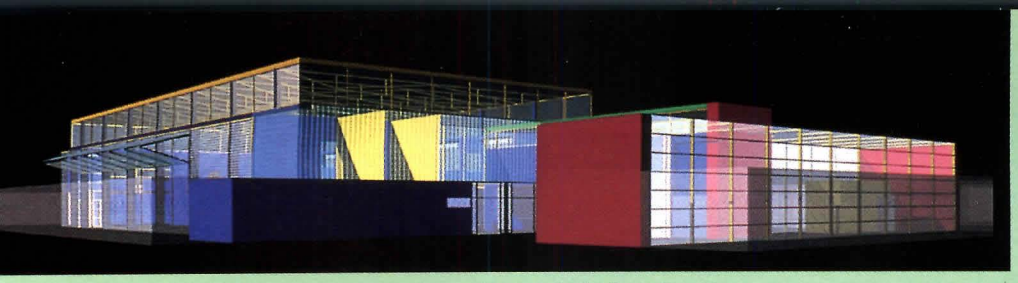
Skidmore, Owings & Merrill (SOM) is designing terminals at the Toronto airport with **Moshe Safdie Associates** and **Adamson Associates** and at Manila's Ninoy Aquino International Airport. Meanwhile, the firm is closing its 40-person Washington, D.C., office in June 1998. And **Joe Gonzales** has resigned from his position as design partner in SOM's Chicago office.

In Baltimore, **Zimmer Gunsul Frasca Partnership**, in association with **Hennington, Durham & Richardson**, has designed a 217,000-square-foot, $48 million research laboratory at Johns Hopkins University.

Should architects be liable for compliance with the Americans with Disabilities Act (ADA)? The federal district court in Minneapolis thinks so. Last month, Judge John R. Tunheim rejected **Ellerbe Becket**'s motion to dismiss the case brought against the firm by the U.S. Department of Justice for alleged violations of the ADA in the design of six sports arenas. Ellerbe is appealing the rejection, and expects a decision later this month.

Yale University is building its first new dormitory since the construction of Eero Saarinen's Ezra Stiles and Morse colleges (1962). Designed by New Haven-based **Herbert S. Newman and Partners**, the new dormitory comprises 110 double rooms and is scheduled to open next year.

Pasanella + Klein Stolzman + Berg is designing the 20,000-square-foot Williamsburg Community Center in Brooklyn for New York's housing authority. New York architect



Pasanella + Klein Stolzman + Berg's Williamsburg Community Center in Brooklyn

Scott Habjan won the Van Alen Institute's design competition for a sun shelter for Pier 54 on the Hudson River. Another competition in Manhattan is in the works: The Municipal Art Society and the Tri-Board Task Force on Columbus Circle are inviting architects, landscape architects, and planners to develop schemes for the redesign of the beleaguered circle for an exhibition to be held next year.

Museum mania continues. Oklahoma City architect **Rand Elliott** is designing three museums in his home state: the 10,000-square-foot Fenster Museum of Jewish Art in Tulsa; the 32,000-square-foot Sands Spring Cultural and Historical Museum in an old power plant outside Tulsa; and, encompassing an entire ciy block, the 3,200-square-foot Frisco Railroad Depot Museum in Frederick.

The new Schmidt Museum of Coca-Cola Memorabilia is being designed by **Frank O. Gehry & Associates** outside Louisville, in Elizabethtown, Kentucky. The 80,000-square-foot museum is being built to house the world's largest Coke collection.

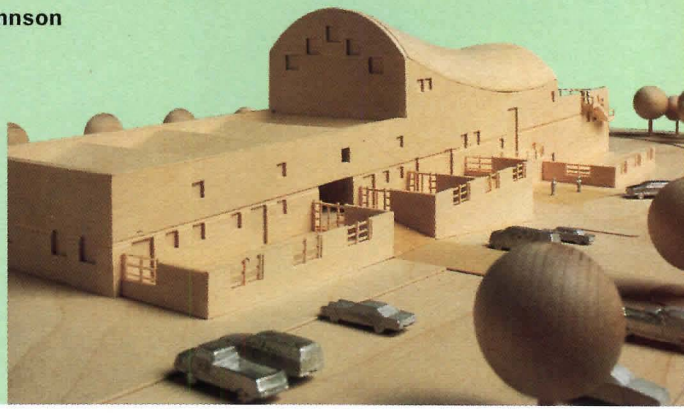
The State Preservation Board of Texas has named a shortlist of five architects in its competition to design the 165,000-square-foot Texas State History Museum in Austin: **Cambridge Seven Associates**; **Hammel Green & Abrahamson**; **E. Verner Johnson & Associates**; **Morris Architects**; and **Polshek and Partners**.

And construction began last month on a $5.6 million, 26,000-square-foot art museum, designed by **Hardy Holzman Pfeiffer Associates**, in the West Texas town of San Angelo.

Outside Seattle, **Steven Holl** is designing the 40,000-square-foot Bellevue Art Museum, in conjunction with local firm **Sclater Kimball Architects**.

Several firms have garnered new commissions in Asia: **Minoru Yamasaki Associates** recently won an international competition for a 495,000-square-foot town hall in Inch'on, South Korea. **Richard Rogers Partnership** is designing a 1.2 million-square-foot, 690-foot-tall headquarters for Nippon Television in Tokyo, that is scheduled to open in 2003.
(continued on page 29)

Hardy Holzman Pfeiffer Associates' saddle-roofed San Angelo Museum of Fine Arts



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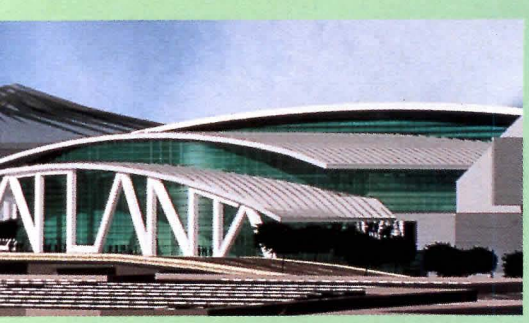


HOK and Arquitectonica's Atlanta arena

(continued from page 27)

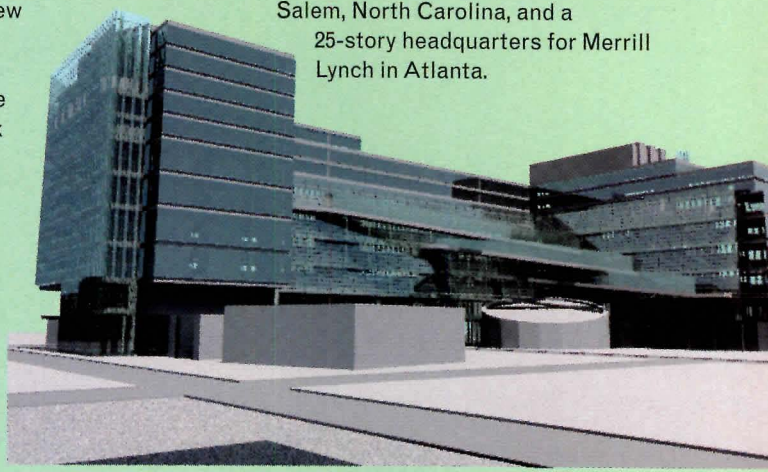
Ted Turner's latest development project, a $140 million hockey and basketball arena designed by **Arquitectonica** and **HOK Sport**, was unveiled last month in Atlanta. The arena is enclosed by three arced roofs, one of which is supported by columns spelling out the word "Atlanta." The arena, which is scheduled to open in 1999, sits adjacent to the CNN Center and Centennial Olympic Park.

In Dakar, Senegal, a jury chaired by **Harry G. Robinson III** selected a project by Italian architect **Ottavio di Blasi** in the competition to design the 130,000-square-foot Gorée Memorial museum.

Rem Koolhaas is designing a new Dutch Embassy in Berlin and a master plan for the harbor in Genoa, Italy.

Rafael Viñoly Architects is giving the Bronx judiciary a new architectural identity, with two new courthouses in the South Bronx. The local firm is currently designing the 1.2 million-square-foot New Bronx Criminal Courthouse, which begins construction in 1999. Viñoly also designed the new 75,000-square-foot Bronx Housing Courthouse, which opened last month on the Grand Concourse. Viñoly is also designing three new science buildings: Columbia University's 27,500-square-foot International Research Institute for Climate Prediction in Palisades, New York; an AIDS research laboratory at Queens College in New York City; and a 400,000-square-foot master plan for the Van Andel Institute in Grand Rapids, Michigan.

Former Cesar Pelli & Associates Senior Associate **Jon Pickard** has formed his own, self-named firm in New Haven. The architect already has several new commissions, including a 300,000-square-foot headquarters for the financial firm Wachovia in Winston-Salem, North Carolina, and a 25-story headquarters for Merrill Lynch in Atlanta.



Viñoly's New Bronx Criminal Courthouse

The expansion of Notre Dame Stadium added 22,000 seats to this famous football venue.

Architect: Ellerbe Becket, Inc. General Contractor: Casteel Construction Corp. Steel Fabricator: Builders Iron Works and Rupel Engineered Products Co., Inc.

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Eamesian Invention

Charles and Ray Eames changed the way the 20th century lived, through their virtuous, expansive approach to design. Now, the vast scope of the Eameses' agenda is meticulously analyzed in their first posthumous retrospective, *The Work of Charles and Ray Eames: A Legacy of Invention*, on view through January 4, 1998, at the Vitra Design Museum in Weil am Rhein, Germany. (The show will debut stateside in 1999 at the Library of Congress in Washington, D.C.) Co-organized by Vitra and the Library of Congress, and curated by Donald Albrecht, the ambitious exhibition portrays the overwhelming diversity of the Eameses' oeuvre in an intelligent, accessible way. The installation, designed by Los Angeles architects Craig Hodgetts and Ming Fung, distills the vivid, energetic ambience of a busy workshop or studio.

A retrospective of Charles and Ray Eames's designs captures the vast scope of the couple's practice.

Rather than presenting a chronology of achievements, the exhibition is divided into five sections—furniture, spaces, beauty, culture, and sciences—that explore the Eameses' legacy through the processes of design, manufacture, and use. The furniture section contains plywood panels decked with sketches, drawings, and prototypes, but there is also an injection molding machine and a mock-up of a rotating drum originally used to test the sturdiness of early plywood designs. Videos show the chairs being made, and advertising material places the furniture in a wider social context. Plywood panels and metal cases, combined with Hodgetts and Fung's variation on the "Eiffel Tower" metal chair bases, echo the refined functionalism of the Eameses' furniture.

Wider cultural and creative influences are explored through arrays of objects, slides, and memorabilia, (representing a fraction of the Eameses' collections of objects), which were kept and catalogued as examples of design principles. Visitors can browse through drawers full of Ray's office paraphernalia or peruse slides of gravestones, geological formations, Arabic calligraphy, and trees on a huge light box. A display of Christmas cards make a vibrant, witty, and curiously affecting freestanding collage.

What emerges from the show is an acutely human view of the world, one that sees wonder in the apparently mundane—in the way an auditorium fills up, a school yard is cleaned, or how a set of chair bases can be magically transformed into a candelabra. As Beatriz Colomina notes in the accompanying catalog: "For Eames everything was architecture—from the setting of a breakfast table to a circus performance." From the quotidian to the cosmic, everything mattered. *Catherine Slessor*

Catherine Slessor writes for The Architectural Review.

HAD ENOUGH EXCIT

SCHLAGE STEELCRAFT LCN

Washington's Planning Politics

Despite D.C.'s governmental woes, a wave of development is sweeping downtown.

New buildings and big plans for Washington, D.C., tell a tale of two cities. The local city, which lacks a competent planning authority, is subordinate to the federal city of Congressional overlords, who freely preempt the will of residents as they see fit. Indeed, this summer, a federally appointed control board took over the District's corrupt and bankrupt city government, stripping Mayor Marion Barry of all but ceremonial powers.

The Control Board has the colossal job of bailing out and reforming Washington's dysfunctional agencies, from the school district to the police. This spring, the board gutted the D.C. Office of Planning, cutting the staff of 87 people down to 13, clearly signaling that urban design ranks last on the list of priorities. The current crisis, local preservationists warn, guarantees that the profit-minded motives driving several monstrous new downtown construction projects are likely to continue unchecked. Thus, the most thoughtfully designed city in America, laid out by Pierre L'Enfant in 1791, has no coherent planning vision—or at least none to match the political power of the city's cartel of office-building and parking-lot developers.

"It's not that there's no planning in D.C.," observes preservation attorney Tersh Boasberg, former head of city zoning and now chair of a group of architects, planners, and other L'Enfant fundamentalists called the Committee of 100 on the Federal City. "It's just that there is no synthesis of professional and political planning in the city." Mayor Barry initiated a downtown plan in the early 1980s for more housing and retail stores and incorporated it into the city's comprehensive plan, which is supposed to be upgraded every four years, but is tweaked constantly to suit developers' whims. The National Capital Planning Commission, a Congressionally appointed body established in 1924, released a sky's-the-limit plan for the city's monumental core and major avenues last year, but failed to project how it would fit into the mayor's downtown plan, underscoring the split between local and federal Washington.

But even without an official, up-to-date planning blueprint, at least two dozen major building projects are

Cesar Pelli's National Airport shimmers on the Potomac.

either planned, under way, or nearing completion around the District lines. Many are bold Modern buildings designed by out-of-town architects, including Cesar Pelli's new National Airport terminal. Several contentious proposals for new national memorials are also drawing fire for their rude imposition on Washington's sacred open space. But nothing has shaken local preservationists like the wave of speculation and development sweeping downtown's eastern end.

Three massive new projects threaten to destroy the capital's most historic commercial area and sunder the fragile links between the city's residential neighborhoods and business district. Next month, sports fans will flock to the opening of the new 20,000-seat MCI Center hockey and basketball arena, designed by Ellerbe Becket and Keyes Condon Florance (now KCF-SHG), which rides hard over a neighborhood planned in the 1980s as a residential and mixed-use zone. Four blocks away, a 2.1 million-square-foot convention center—designed by a team comprising Atlanta-based architect Thompson Ventulett Stainback & Associates and local architects Devrouax & Purnell and Mariani Associates—was approved in September, despite furious local opposition. Its three-block-long mass will stretch from Mount Vernon Square downtown into the historic Shaw residential neighborhood. And on the horizon several blocks away, architect HNTB is helping review a potential site, one of several around the city, for a new baseball stadium (though Washington has no team).

"Downtown Washington is in great danger of becoming a seasonal recreation area with no parking spaces," argues Boasberg, whose committee recently lost its fight to move the convention center to a site near the railyards north of Union Station and the U.S. Capitol. Now the Committee of 100 is preparing to wage war against the baseball stadium as part of a last-ditch effort to save plans for a "living" downtown.

The idea of building up a residential and retail base downtown started in 1982, when the now-disbanded Pennsylvania Avenue Development Corporation (PADC) was at the peak of its renewal efforts on its namesake street. PADC brought a total of 31 projects to the avenue, including two quite successful apartment blocks to the Gallery Place neighborhood, Washington's original dry-goods district. The new downtown plan prescribed putting housing, shops, galleries, and small-scale entertainment venues in the eight blocks between Pennsylvania Avenue on the south and Massachusetts and New York avenues on the north. But local developers, having razed much of historic western downtown in the 1970s for office buildings, began chipping away at the housing quotas of the new downtown plan for the east side, their next frontier.

A unique arrangement allows developers in Washington to control the city's planning rather than letting the city control them. The major

developers all belong to a secretive group called the Federal City Council (FCC), a shadow chamber of commerce and phantom government established by the late *Washington Post* Publisher Phil Graham in 1954. The FCC includes every imaginable Washington brahmin—from top lawyers and business executives to university presidents—including Commission of Fine Arts Chairman J. Carter Brown, whose office controls all development affecting federal lands in the District. "The Federal City Council comes up with bad ideas, and the *Post* flacks them," says one local preservationist, "which gives their plans legitimacy." The FCC's members contribute heavily to city council and mayoral campaigns, which restrains public debate on major development issues sewn up behind the scenes.

With such a compliant civic infrastructure, it was not hard for Abe Pollin, owner of the Washington Capitals hockey team and the Washington Wizards basketball team, to build his new MCI arena on one of the worst possible downtown sites, and to persuade Delegate Eleanor Holmes Norton, D.C.'s nonvoting House of Representatives member, to sign off on borrowing many millions to do so at the height of the city's bankruptcy. "It's an amazing scandal," hisses D.C. Preservation League activist Mary Farrell. "A popsicle stand would have made more money on that site, for all the money the city borrowed to build the arena."

Money aside, some critics see the arena as a pox on D.C.'s preservation movement; in particular, it sets a precedent for violating the L'Enfant Plan, which was listed on the National Register of Historic Places in January. The arena is too big for its block, which meant it had to be built atop G Street, across from the landmark, Ithiel Town and William P. Elliot, Jr.-designed National Portrait Gallery (1836), obstructing the only view of Daniel Burnham's Union Station from the west. Dorn C. McGrath, Jr., a local planning expert who chairs the Department of Geography at George Washington University, calls the new arena "the Great Wall of Chinatown," as it looms over one of Washington's few remaining ethnic enclaves.

Moreover, the arena lacks what all successful new arenas in big cities enjoy: high-capacity streets and highways nearby for truck traffic. And though the facility sits on top of a major Metrorail station, there is scarce public parking within walking distance, which will force fans to park in the garages of commercial office buildings nearby and further enrich the city's developer landlords. Parking is also one of the chief problems with both the new convention center plan and the potential downtown baseball

MCI Arena closes a L'Enfant street (top); Convention center (left) will dwarf Carnegie Library near residential neighborhood.

HOK's Secret Service headquarters

stadium, because spaces for cars will probably occupy tracts designated as priority areas for housing, further alienating downtown from residential neighborhoods.

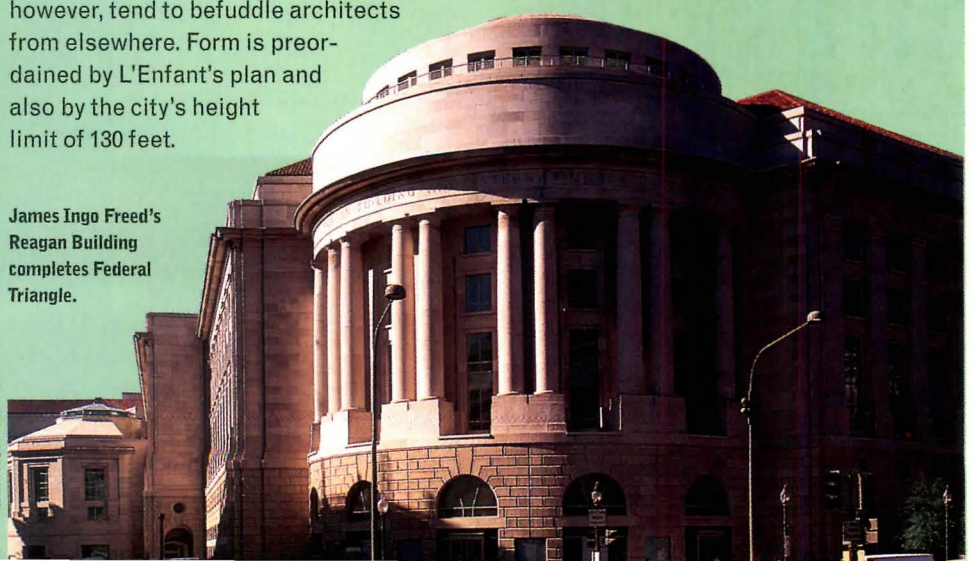
Although the new convention center hasn't yet broken ground, speculators have already prepared designs for reusing the current facility, completed in 1983 and now obsolete. A consortium of local developers led by Herbert S. Miller of American Malls International, proposes to turn the current convention facility into an "American Entertainment Center," a multimedia sports and retail bonanza anchoring a new "interactive downtown." It is replete with 2 million square feet of "magnet attractions" such as a sports museum, a music museum, and themed stores and restaurants in the midst of a prime cultural neighborhood that includes two national art museums, many galleries, and two landmark libraries.

The federal government is also active on downtown's east end. The U.S. General Services Administration is soliciting reuse proposals for the historic General Post Office (now known as the Tariff Commission Building), designed by Robert Mills in 1842, with an 1855 addition by Thomas U. Walter. Skidmore, Owings & Merrill recently completed a new regional headquarters for the FBI, and Hellmuth, Obata & Kassabaum is about to break ground on a new Secret Service headquarters.

Near the National Mall, the government recently opened the first phase of the white elephant of the decade, the $738 million Ronald Reagan Building and International Trade Center, designed by James Ingo Freed as the last piece of Federal Triangle.

Freed is also designing a new downtown home for the Washington Opera in the Beaux-Arts shell of a former department store. Freed's firm, Pei Cobb Freed & Partners—having designed the National Gallery's East Wing and the United States Holocaust Memorial Museum—ranks among several prominent architects designing major new blocks in the District. Among the new works are Henry Cobb's somber headquarters for the American Association for the Advancement of Science, which plants two enigmatic triangular towers at the heart of downtown's commercial district.

Washington's site and scale restraints, however, tend to befuddle architects from elsewhere. Form is preordained by L'Enfant's plan and also by the city's height limit of 130 feet.



James Ingo Freed's Reagan Building completes Federal Triangle.

MAXWELL MACKENZIE

KENNETH M. WYNER

Devrouax & Purnell's African-American Civil War Memorial sits atop Shaw Metro station.

The combination makes for unseemly proportions in buildings trying to look monumental without vertical advantages. For example, Robert A.M. Stern Architects' clunky, new Neoclassical office building for Gerald Hines cribs Washington's requisite arches, columns, and pediments in stone, but the embellishments are weak apostrophes against the building's oblong facade. Michael Graves's new International Finance Corporation headquarters brings fresher color and texture than Stern's building to a block-long limestone pile, but its thick columns and lintels overpower the street. Cesar Pelli also has a new office building nearby with a familiar rounded-corner bay. It sports a curtain wall that is crisp, but lacks the depth that Washington's short buildings demand. The skin is the stuff of buildings 100 stories taller, miles away from Washington's stately monumental esthetic.

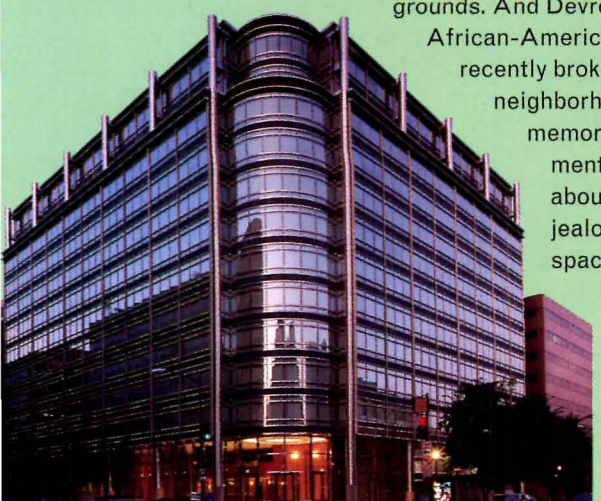
Washington's buildings are really meant to defer to its grand open spaces. Preservationists arch their backs at anyone proposing to infringe on the city's noble plazas and parks, as seen this year in two testy debates over new memorials. Architect Friedrich St. Florian's fascistic design for the World War II memorial was rejected by two federal commissions, and the architect has yet to present a revised design (*Architecture*, September 1997, page 9). Now opposition is building against James Ingo Freed's U.S. Air Force Memorial on Arlington Ridge, a grassy knoll across the river overlooking the city, 500 feet from the Marine Corps War Memorial. Many current and former Marines are miffed by the Air Force memorial's proximity to their own; among them is Representative Gerald Solomon (R-New York), who is trying to win an injunction against the proposal.

MAXWELL MACKENZIE

Michael Graves's IFC building overwhelms block.

Not all memorial planning in Washington is rancorous, however: Last month, New York architect Weiss/Manfredi's Women in Military Service Memorial opened at the foot of Arlington National Cemetery, housing an educational center within an abandoned hemicycle. A new park commemorating Japanese-Americans interred during World War II, by local architect Davis Buckley, has been approved for the U.S. Capitol grounds. And Devrouax & Purnell's African-American Civil War Memorial recently broke ground in the Shaw neighborhood. A successful memorial is no small achievement in a city that is blasé about bad buildings, but jealously protective of the spaces in between them.

Bradford McKee



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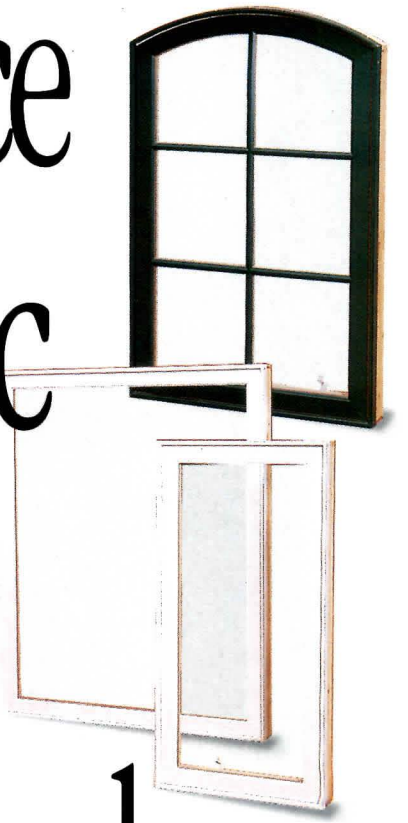

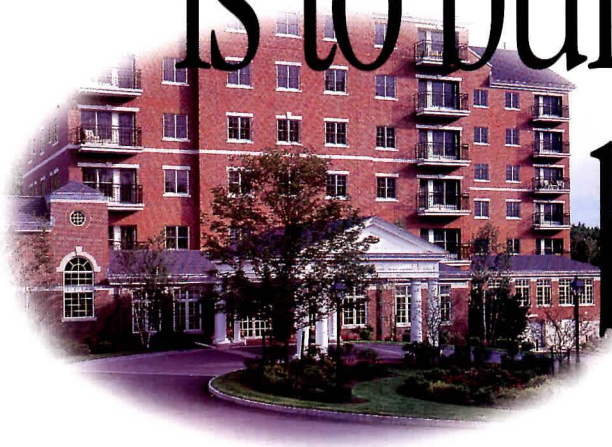

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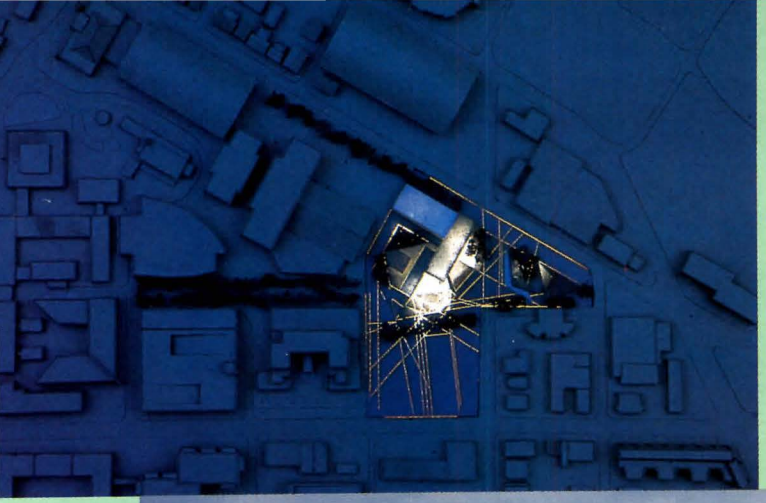


University of Minnesota Gateway Center, Minneapolis Antoine Predock Architect and Korunsky Krank Erickson

ROBERT RECK PHOTOS

Campus center is located at entrance to the university (top). Predock's sculptural forms contrast with boxy campus architecture (above). Section shows intersection of entrance hall and copper-clad office wing (below).

Visitors who approach the University of Minnesota's Minneapolis campus from the west are confronted with the exuberant steel curves of Frank Gehry's Weisman Art Museum (1994) on the banks of the Mississippi River. But the campus's eastern approach is more mundane, a situation that will be remedied when Antoine Predock's 225,000-square-foot campus center opens in 1999.

Predock was inspired by local geological forms and vernacular architecture—"a rock face or the iconic huddle of the Minnesota farmstead"—in developing the campus center. Accordingly, he designed a sculptural grouping of three discrete wings, in conjunction with local firm Korunsky Krank Erickson. The largest of these elements is a six-story, copper-sided office block with a dramatically sloping roof. It is intersected on the north by a lower, four-story wing clad in precast concrete. These wings will house the offices of the University of Minnesota Foundation, the state medical association, and the university's alumni association and board of regents.

On the south end of the copper block lies an irregular, faceted volume housing the main entrance, campus store, restaurant, auditorium, and lounge. It is clad in native granite and glass, and crisscrossed by thin glazed bands. The folded planes of the hall, which Predock likens to "the granite strata of Minnesota," are also employed in his new surrounding landscape of water, granite, and indigenous plants. *Ned Cramer*

OUR WINDOWS ARE MADE FROM WOOD. AND SOMETIMES,

When architect Bill Becker redesigned this summer retreat in the Berkshire Mountains, the home's setting provided all the inspiration he needed. He used native wood and stone extensively. Fashioned the front porch supports from 8" logs. And for the north end of the home, which looks out over a lake to the mountains beyond, he created a wall of glass using windows and doors with custom-designed muntins that echo the shape of the surrounding pines. Who did he contact to supply these unique products? Bill Becker's search began and ended with one phone call. To Marvin Windows & Doors.

From Bill's drawings, the company produced three large fixed windows and eight doors, three of which open onto the deck. Marvin's ability to create these custom products inspired similar design elements in the home's interior, including a rustic stairway made from pine logs and branches. Still, as unique as they are, these aren't the only Marvin windows that figured prominently in the design.

To double the home's square footage without violating local zoning codes or overwhelming the surrounding cottages, Bill skewed the second level off the long axis of the first floor by seven degrees to create the illusion of a dormer. Marvin windows which step down in height help further the illusion. And to optimize their energy efficiency, these

Michael Graves has designed more than 200 buildings and sold nearly a million teapots. What's he up to now?

In the 1980s, Michael Graves was Postmodernism's poster boy. His buildings made the nightly news. His drawings sold at auction. He even designed a shopping bag for Bloomingdale's. More so than any of his peers, Graves became synonymous with celebrity. The publicity has faded of late, but the 64-year-old Schwirmer Professor of Architecture at Princeton University continues his prolific practice, designing museums, condominium towers, houses, and office blocks in cities from Manila to Miami Beach. Graves is also one of the nation's leading industrial designers. His teapots, watches, and picture frames sell briskly in specialty and department stores, while his fabrics and furniture appear in trade showrooms. Across the street from his Princeton, New Jersey, office, Graves even has his own retail store, which he intends to replicate in other locations.

Selling Graves

Graves exposes some of his favorite products for Alessi.

EINSTEIN PHOTO

ARCHITECTURE: Are you busy?

MICHAEL GRAVES: Very. There are more than 20 active architectural projects in the office right now. We've never been an office that hires and fires quickly—it's a big deal here if one person leaves or arrives. The only time we were bigger was while doing the Dolphin and Swan hotels and the Disney corporate headquarters, all more or less at the same time, and all fast-tracked. We had about 110 then, but that was difficult. We have these two 18th-and 19th-century houses, and the little space in New York City. And that's that. We like the current number of about 70.

What are some of your current projects?

We're finishing a hotel on the Red Sea in El Gouna, Egypt—the Miramar, and have another in design. The International Finance Corporation just opened in Washington, D.C., as did a residence hall for New Jersey Institute of Technology. We're working on a high-rise office tower for the Ministry of Health, Welfare, and Sport in The Hague. And, of course, there's lots of work in Asia. We've got a number of high-rises in the Philippines, China, and Korea, and the National Museum of Prehistory in T'aitung, Taiwan, is out to bid.

Do you have a favorite project?

I'm often asked that, and I always say no. My favorite project is always the one I'm working on at the moment because my mind is absolutely encased in it. Right now, that happens to be designing the scaffolding for the repair of the Washington Monument, which should be erected in May 1998. It isn't even a building, and it's designed to be taken down by the year 2000. But it's important.

How is the office organized?

Four senior associates and I run the studios, and one senior associate is in charge of management.

You first achieved fame as a Modernist.
A group of us tried to continue what we were taught in school, which was Le Corbusier, Le Corbusier, Le Corbusier. It became limiting. I remember Charles Moore saying that you needed a guide to the Benacerraf House (1969), that the forms were distant from any accessible language. He thought I was speaking a private language. That wasn't my intention then, and it still isn't.

I wanted to explore other interests, a more figurative architecture, something that was associational in a less abstract way. I wanted to explore color, texture, form, and context in a way that, for me at least, the white buildings didn't allow. That was also when people were starting to say "enough is enough" with the commercial Modernism of the 1960s and '70s, especially in the critical areas of urban planning and preservation, where we all wanted to work.

And now?
I find myself in a period of refinement, trying to make what I established some time ago better. It isn't a new architecture every Thursday morning—which some people want and some people can do. I'm not interested in that. With every different building type and context, for me there are big changes. But to the public, I think the changes seem very small. I want to make architecture that one has to look at carefully, experience, be a part of, read—there is something new each time you come to that architecture. Yet it can't be so abstract that there is no access to its internal language. At the same time, I've always been fearful of becoming a populist. I try to find something accessible, but like any art form, something you have to work at.

Recent Graves-designed projects include proposed scaffolding for repair of Washington Monument, Washington, D.C., and Miramar Hotel, El Gouna, Egypt (top) now in construction.

How is there a difference between a Michael Graves building in Egypt and one in The Hague?
In everybody's work, there is a balance of what makes it particular to a place and what makes it general to the language of architecture. If I build on the Red Sea and at the same time in The Hague, the methods of construction, the quality of light, and the texture of the whole endeavor are very different. But ultimately, you're able to see that there are proportional similarities, issues of public and private, light, and so on, that I always work on in buildings, no matter where they are. Anybody with a knowledge of the place,

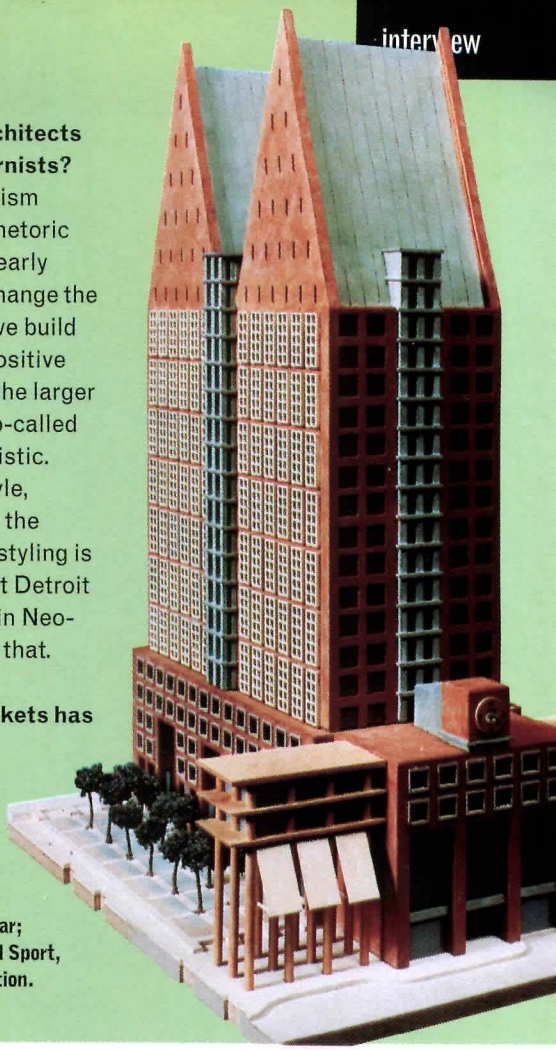
my work, and modern construction techniques and esthetics can tell the difference between my buildings. However, some people might say they are the same.

But doesn't the architectural language stay the same?
It probably changes less. I can use a cylinder, a cube, a rectangle, or a colonnade in a variety of ways. They are part of my language. And they were part of [Andrea] Palladio's language, and Aldo Rossi's language. They are part of architecture's language, what we know and can manipulate.

That language gets lumped under Postmodernism.
There really is a madness, you know, that we as a culture have decided that everybody has to be put into a certain category. Postmodernism was taken to the lowest common denominator, just like Modernism, so easily copied, without any of its intensity, its depth.

What do you think of architects described as Neo-Modernists?
Anyone knowing Modernism understands where the rhetoric came from and what the early guys were trying to do: change the work week, and the way we build housing and cities. I'm positive that's not what's behind the larger firms now practicing a so-called Neo-Modernism. It's stylistic. Now, I honor the word style, because it has to do with the way we conduct life. But styling is something more like what Detroit does. I think the interest in Neo-Modernism comes out of that.

One of your biggest markets has been consumer goods.
It's enormously rewarding.



Art and Science Building at Stockton College, Pomona, New Jersey (left) was finished last year; Ministry of Health, Welfare, and Sport, The Hague (right) is in construction.

It actually started when I was in high school and made all the furniture for my room. I grew up in the time of Charles Eames and others who were admired for this kind of work. Le Corbusier and Mies were certainly successful at it, but it wasn't a central issue for them. I'm more like Josef Hoffmann, who did it more continuously. If you make things well, people keep coming back. It almost perpetuates itself.

How many objects have there been?
Hundreds, over 120 for Alessi alone. They don't all see the light of day, but many of them do. In the beginning, we thought these things wouldn't take as long as buildings, but they do. Everything that gets made takes two years. And you have to pick and choose wisely: If you do something like a sink for one company, you're probably not going to do one for another company.

Graves designed egg cups for housewares manufacturer Leonardo.

Do they all sell well?
No. Some sell much better than others. The mantel clock sells well, but the timekeeper doesn't. I'm not sure why. The teakettle is exceptional. There is a kind of retail cycle with these things, a two- to three-year period in which they reach a peak, then descend, and eventually go off the market. Not the kettle. It has been on the market for about 12 years and it still sells. Nearly a million so far. Alessi's been around for four generations and this has been their biggest seller.

And now you have retail stores?
Only one so far, right across the street. It's a prototype, but we are in discussion right now for something much larger.

You're one of the few architects who does celebrity endorsements. How did that get started?
Dexter Shoes came to me and said they'd like me to endorse their product in return for a significant donation to the charity of my choice. I thought that was good, so I did it.

You never received money for the ad?
No, but I did receive a pair of shoes. I had never heard of Dexter Shoes. They had to send me a catalog so I could pick something to endorse.

You've done other ads as well.
Yes, but it's not exactly a Michael Jordan sort of thing. We did the Absolut ad because I got to draw. And for the Bombay ad, we got to design a beautiful glass that was donated to the Met.

What about your billboards in Miami?
Well, that was a way for the developer to sell the architect, in a sense, rather than build model units to sell the architecture.

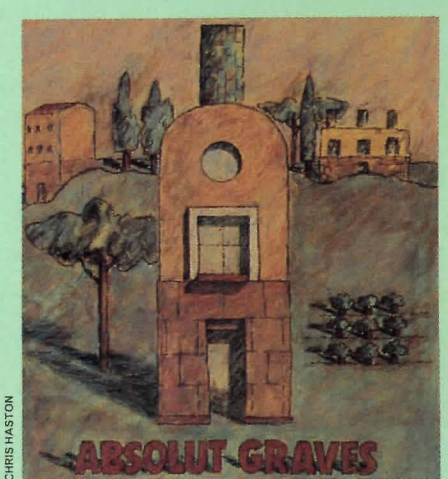
I think the models would have sold faster. But I suppose the billboards were cheaper.

But you agreed to it?
Not exactly. I agreed to have my picture taken. I didn't know how they were going to use it. I'm a little wiser now.

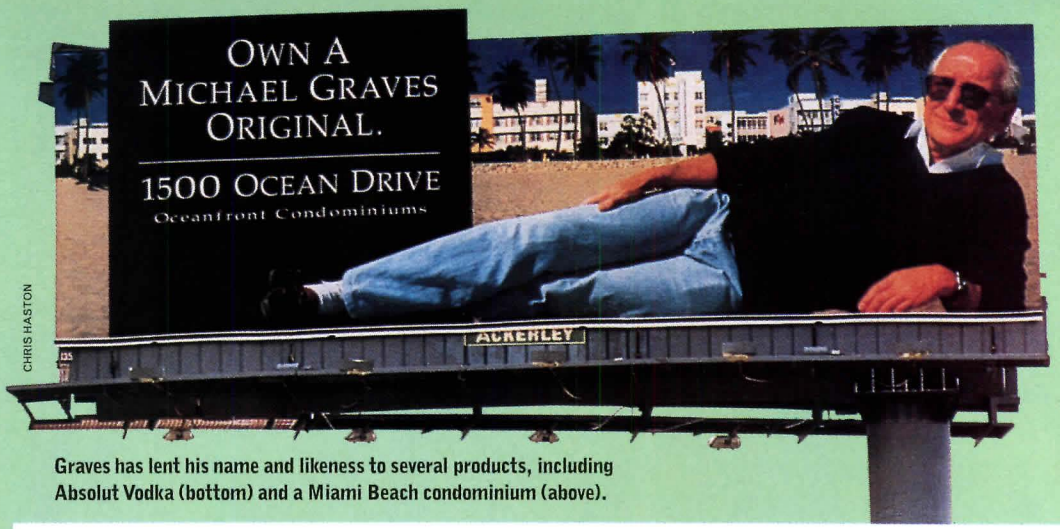
Would you do it again?
I'd never be asked. It's funny to me now. You know, it wasn't just a billboard. It was also on the side of buildings and even on buses. There was one benefit to that, I guess. I was getting my car out of valet parking once when one of the buses with me on it drove by. The attendant saw the bus and recognized me. I got my car before everybody else. I think architects need to be out in front of the public. But if it becomes too commercial, that's not good. It's a fine line.

Why don't we see more of you in the press these days?
New is news, and according to the press, I'm old. Someone once asked Philip Johnson, "Isn't Graves the Michael Jackson of architecture?" And Philip said, "You have to understand that kind of fame. People get used up. And Michael Graves will fade and come crashing down like the rest of us."

Do you feel like you've crashed?
No, we're busier than ever. But the atmosphere is different than before. It wasn't just the architectural press. There was CBS and NBC, and tell us about this building, and tell us about that building, and won't you please be on the nightly news. It was a moment. It didn't last long, but it was a moment.



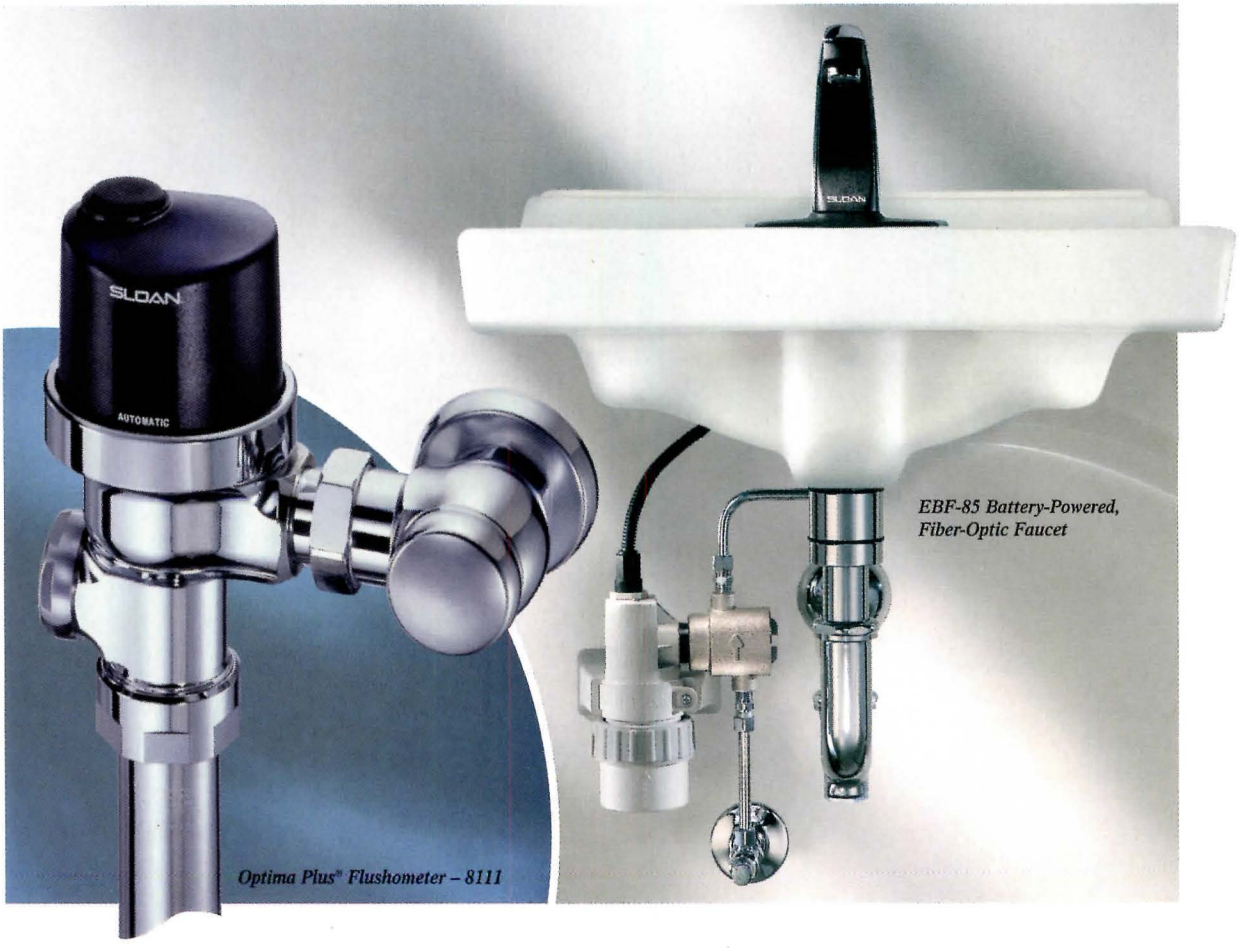
CHRIS HASTON



CHRIS HASTON

Graves has lent his name and likeness to several products, including Absolut Vodka (bottom) and a Miami Beach condominium (above).

Sloan's "Perfect Match"



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Maxed Out

A massive headquarters for a credit card company in Wilmington, Delaware, overloads a downtown block.

Wilmington, Delaware, a small city of 71,000, has neither a vital downtown center nor a wealth of good architecture. So when MBNA Corporation, a credit-card company that is one of the city's largest employers, decided to move its headquarters from suburban Newark to downtown Wilmington, the company had a significant opportunity to create a complex that would revive the city center.

Rather than enliven downtown, the massive new headquarters robs the area of urban activity. MBNA's quartet of precast concrete buildings with Classical ambitions, designed by Homsey Architects of Wilmington, gobbles up 2.9 million square feet of space along a four-block area in downtown Wilmington, across from historic Rodney Square. Threaded together by skywalks, the boxy buildings create a barrier to their surroundings and an insular atmosphere. MBNA's message is similar to one that has killed downtowns across the nation: Do not venture outdoors; stay safe inside the walls of corporate America.

The largest of the four buildings houses the credit card company's main headquarters, completed two years ago at the corner of 11th and King streets. A nine-story tower completed last year and its identical twin, along with a lower-rise building in between, were completed last month. Approximately 3,000 employees will work within the four buildings.

But instead of attracting city and suburban residents downtown with an urban amenity, the ponderous mass of three most recent structures discourages pedestrian life. The four skywalks, with their reflective glass, only add to this sense of isolation. Dominated by forbidding nine-story concrete walls, the side streets recede into insignificance. Newly-planted flower beds cannot mask the barrenness that such structures create.

Each tower is designed as a concrete cube with a row of reflective windows more suited to jails than offices. Classically-inspired cornices, pediments, and moldings are an attempt to break up the massing, but fail to ameliorate the building's bulk. They are superficial and pale in comparison to the stately former Post Office building (now the Wilmington Trust Center) and Neoclassical City Hall and Courthouse, both of which lie directly across the street.

While MBNA should be credited for investing in a struggling downtown, the company seems to have forgotten about the employees who work in its buildings, as well as the rest of downtown Wilmington.

Michael Maynard

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revisiting the surface • traditional materials, non-traditional treatments

architecture interiors

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revisiting the surface

BY JEFF HIRSH

With a powerful upswelling remeniscent of the *fin de siecle* creativity of one hundred years ago, architects and designers are "revisiting the surface," exploring new ways to exploit color, light and texture.

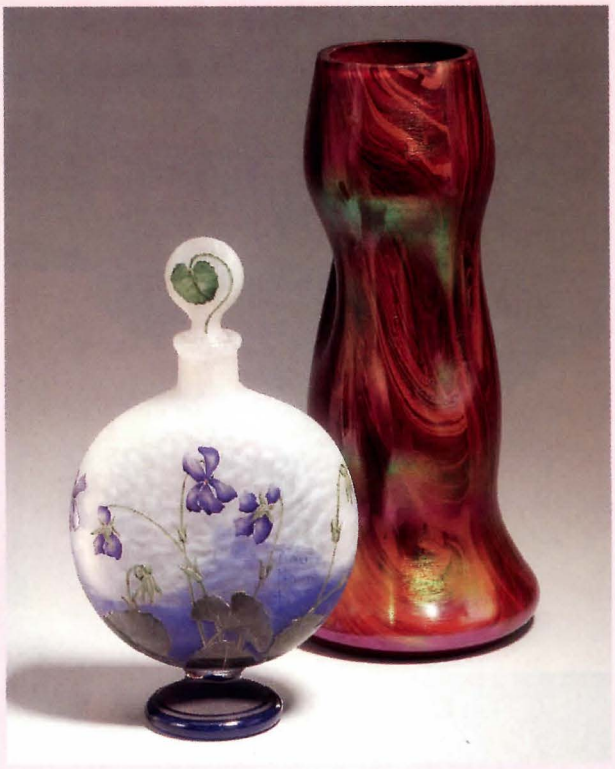
Inside and out, preconceived notions of the proper place or fuction of traditional materials are being retested and reexamined.

Glass panels shimmer with interplays of light and color that recall the diverse techniques used by Tiffany, Loetz, Daum and other firms to transform transparent glass into a seemingly endless array of translucent and opaque surfaces.

A wall of mono-cast dimensional fossil blocks stands adjacent to a staircase at the National Geographic Building in Manhattan.

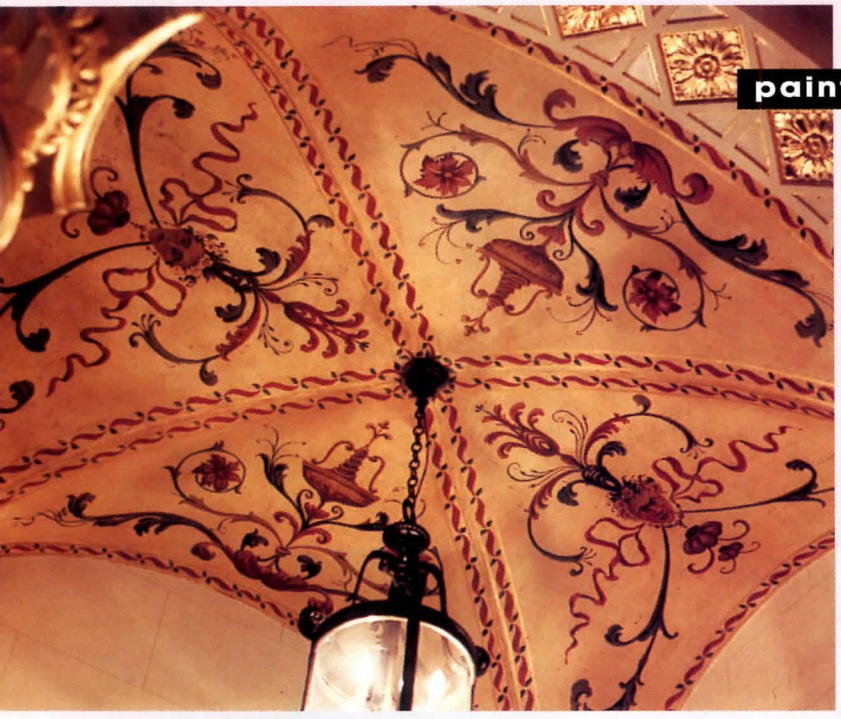
In a corporate meeting room, leather tiles with the burnished look of old saddles are on the floor instead of on the wall.

Join us as we revisit the surface. Once again, anything and everything is fair game.



Cameo perfume bottle, hammered finish, acid etched with enameling, Daum, Nancy, ç 1905. Vase, red with green iridescent highlights, ç 1900, Loetz, Germany. Private collection. Digital photo: Line & Tone, NYC.

versatile studio dedicated to the art of the finish



painting

EverGreene Painting Studios is a full service architectural decorative arts studio with offices in New York City, Washington, D.C., and Wisconsin. Its three departments include Decorative Painting and Finishes, Murals, and Restoration. Its range includes everything from trompe l'oeil, faux bois and marbleizing to stenciling, gilding and specialized finishes. EverGreene also works with patinations on metal and metal leaf, specialty and tinted plaster, sculpting and moldmaking, and stained glass.

EverGreene Painting Studios, Inc., 635 W. 23rd Street, 4th floor, NY, NY 10011; 212.727.9500

Unique mono cast panels, created by EverGreene Studios for the National Geographic Building in New York City, using bones, stones, shells and other artifacts to imitate fossils. The panels were screwed directly onto a steel stud wall.

Decorative stenciling was uncovered during scraping of the ceiling in the stairway leading up to the grand ballroom in the Plaza Hotel, New York City. EverGreene created this ceiling in the style of the original using hand painting and stenciling. Designer: George Gregorian.

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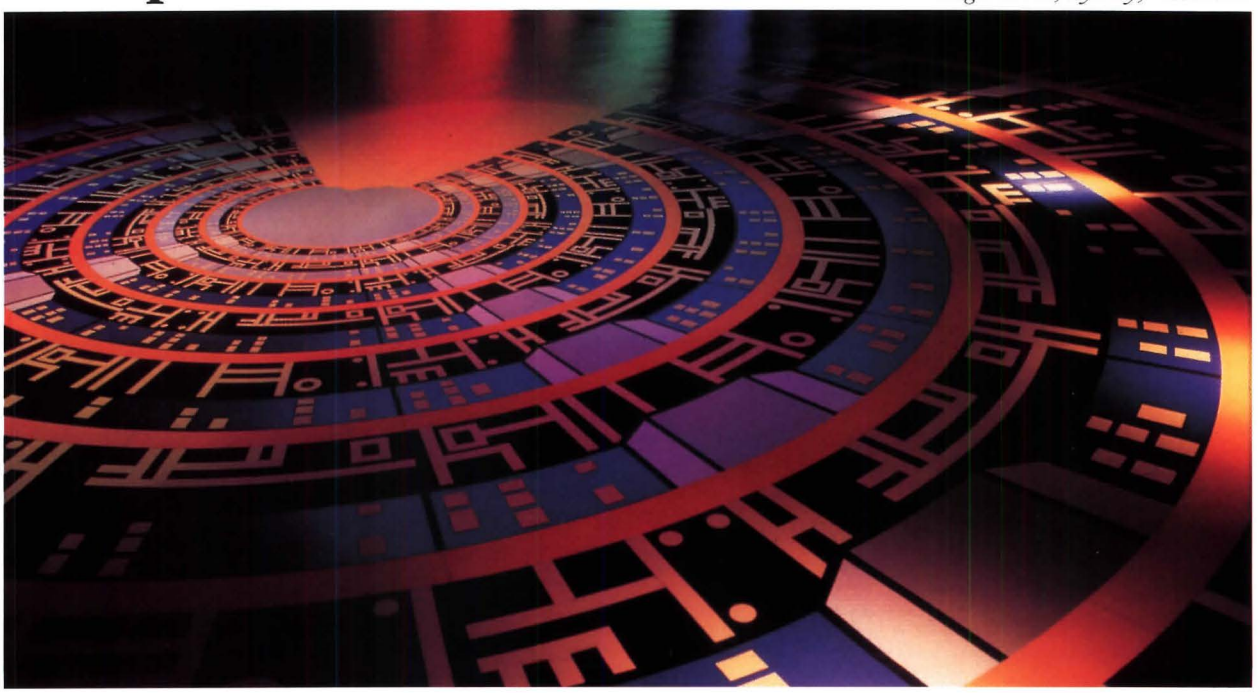

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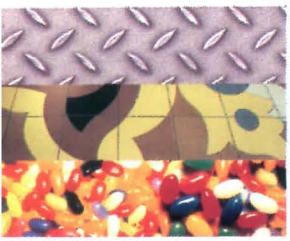

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Fin Color Ply™ is an industrial cabinet grade, all Finland birch, high-density phenolic resin impregnated plywood panel. The material is finished on both sides, available in Yellow, Black, Green, Dark Brown, Light Brown, Red, and Clear Transparent.

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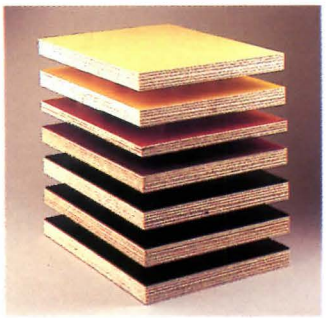
Finland Color Plywood Corporation, 310 Westminster Avenue, Venice, CA 90291; 310.396.9991



Fin Color Ply™, available in six colors and clear transparent.

wood

"New Wave" and "Surround" chairs in Fin Color Ply™, designed by architect Gregg Fleishman, Culver City, CA. Photograph© Brewster & Brewster Photography.

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The material is highly durable and resistant to damage. The resin matrix and lacquer top coat both serve to retard patination and ensure long life to the surface's metallic highlights. Rich metallic surfaces add a lustrous complement to textures ranging from sculptural/reliefs to geometrics.

Forms+Surfaces, 6395 Cindy Lane, Carpinteria, CA 93013; 800.451.0410

metal

A flat sheet of Bonded Metal® was heated, bend to shape and laminated to the subsurface of this desk.

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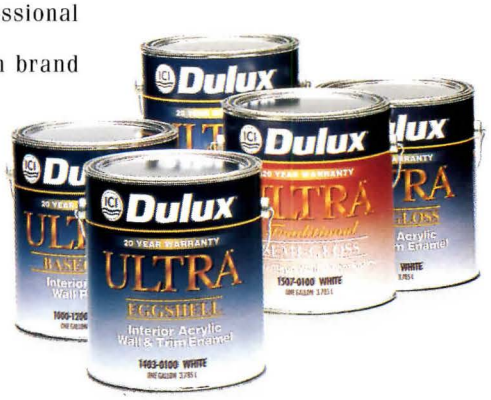

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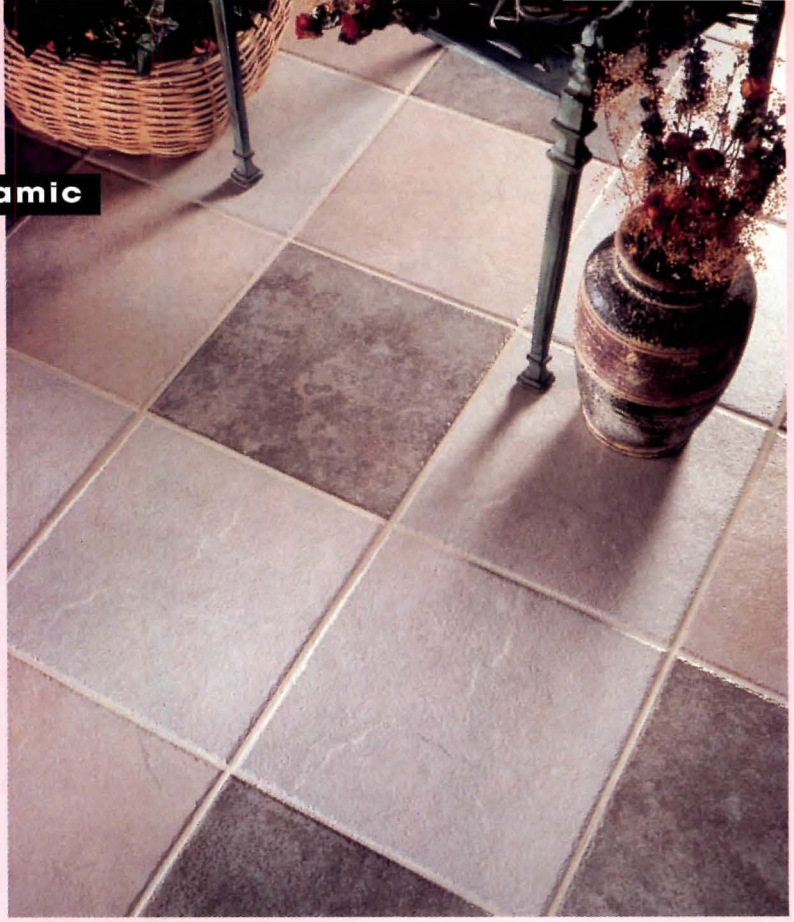
ceramic

pebble-like stone surface on ceramic tile

Subtle stone colors overlay a crystalline dry-glaze treatment, providing a glossy, speckled stone appearance in the Lauros line of ceramic floor tile. Slightly tiered textrures flow naturally across the surface, adding a high degree of realism to the ceramic stone look of the distinctive pebble-like surface. The material is easy to maintain and is suitable for both commercial and industrial applications. Available in Blanco (white), Beige, Salmon, and Verde (light green), Lauros is offered in 13" x 13" squares.

Lauros is manufactured by Zanon for distribution by Florida Tile Industries Inc., P.O. Box 447, Lakeland, FL 33802; 800.789.TILE



Pebble-like stone surfaces and distressed edges give Lauros Ceramic Floor Tile the look and feel of natural stone.

stone age materials, ultra-light space age solutions

stone

Renovation of the Ann Taylor flagship store in New York City using Rochert and Lacome French limestones. Architect, Gensler & Associates

Ultra-light stone panels from Stone Panels, Inc., provide all of the beauty of solid stone at a weight of just 3.3 lbs per square foot. That's about the same weight as 1/4" thick plate glass. The panels are light enough for use in elevators and even yachts, yet are designed for both exterior and interior applications.

The lightweight, aluminum honeycomb-reinforced panels retain the beauty of natural stone, while at the same time eliminating its fragile, brittle properties. This makes the panels an ideal choice for areas where seismic conditions are a factor. The fiber-reinforced epoxy skin, directly behind the stone, provides a water barrier that is effective even with travertine and similar open-structured stones.

Stone Panels, Inc., 1725 Sandy Lake Road, Carrolton, TX 75006; 800.328.6275

The ultra-lite, honeycomb-reinforced stone panel.

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metallic inclusions fused in glass

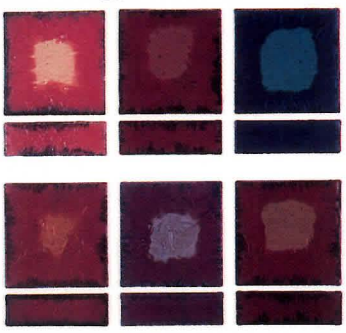
Brilliance and durability combine with color and texture to create distinctive contemporary effects in the Hearthside line of Copper encased glass tiles from Glastile, Inc.

Each tile is an individually hand-crafted piece created by encasing copper foil within layers of glass. The fused materials create unique light reflecting qualities. Hearthside features unusual, rich, earthy colors in heat-fired copper accents.

glass

Available in 4" x 4" and 6" x 6" stock sizes plus 11/2" and 2" liners; custom sizes available. Copper, Burnt Copper, Cobalt, Teal, Mauve Rose, Aqua, Bronze, Blue and Grey.

Glastile Inc., P.O. Box 36566, Greensboro, NC 27416-6566; 910.292.3756



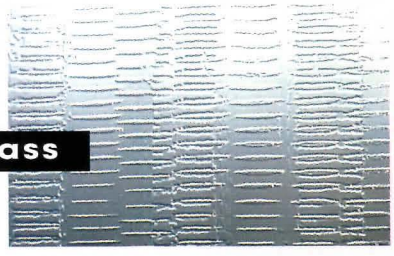
Hearthside Aqua decorative trim beneath the eaves of this private residence in Wisconsin .

Available in a wide range of colors, sizes and shapes.

intriguing patterns in hand crafted, textured glass

FosilGlas™ from Skyline Design is a hand crafted, textured glass with a limitless range of size and design possibilities. The material has the look and texture of expensive kiln-formed glass, but at a lower cost. FosilGlas received the best new product award at NeoCon, 1996.

glass



Strata pattern, FosilGlas™

Available in 10 stock patterns on 1/4" tempered glass. Also available in 3/8, 1/2 and 3/4" thicknesses. Clear, frosted and color finished.

Designed for such applications as door lites, side lites, conference room privacy panels and feature walls. FosilGlas is durable, maintenance-free and meets all architectural glass standard safety requirements.

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FosilGlas™ in the Strata pattern at the Kimball International Showroom, Merchandise Mart, Chicago, IL . Architect, OWP&P. Photo by Hedrich-Blessing.

porcelain

The WildHorse Saloon in Nashville's historic riverfront district is floored in a seven-color porcelain bandanna that undulates across a surface that accommodates up to 800 dancers. The porcelain tile was precision cut by water jet into a giant motif, replete with swirling paisleys, that flows gracefully around both sides of the WildHorse's 30-foot bar. Design team: Swensson Associates, Nashville, TN.

cutting edge technology opens up new design possibilities

An abrasive water jet system precisely cuts harder-than-stone porcelain tile at the rate of 25 inches a minute, opening up an infinite array of design possibilities. Crossville porcelain tile can be finely cut to virtually any motif a designer can imagine, from a complex corporate logo to an original medallion or scenic mural.

The advantage of porcelain is that the color goes completely through the tile body. There are no clay edges to show and no risk of chipping surface glazes.

Crossville Ceramics, P.O. Box 1168, Crossville, TN 38557; 615.484.2110

laminate

laminate designs challenge viewers to reach out and touch

Laminate design from Wilsonart International have "so much depth, color and texture that you want to reach out and feel them," says Barbara Schirmeister, ASID, Wilsonart's color consultant. "Of course, when your fingers touch the surface, your mind realizes that it has been tricked! The surface is as smooth as...well laminate."

For more thatn 40 years, Wilsonart's palette of color and design has appeared on everything from office desks to soda fountains, store fixtures and countertops. The new design adds textural depth and exciting visuals to the world of laminates.

Wilsonart International Inc., 2400 Wilson Place, P.O. Box 6110, Temple, TX 76503-6110; 254.207.7000

Fantasy, playfulness, texture and the illusion of depth dominate the direction of the new laminate designs from Wilsonart.

porcelain

detectable warning tiles that look as good as they feel

Crossville Ceramics has developed TACTILE, a line of detectable warning porcelain tiles with a patent pending two-tile raised dot pattern that is easily discernable underfoot.

TACTILE is designed to meet the requirements of the Americans with Disabilities Act, while at the same time providing designers with a warning tile that is fully modular and color coordinated with Crossville porcelain tiles. Available in all 45 CROSS-COLORS and OSHA Gold.

Crossville Ceramics, P.O. Box 1168, Crossville, TN 38557; 615.484.2110

TACTILE is included in the installation of Crossville porcelain tile at the new LAX Control Tower, Los Angeles International Airport.

cork

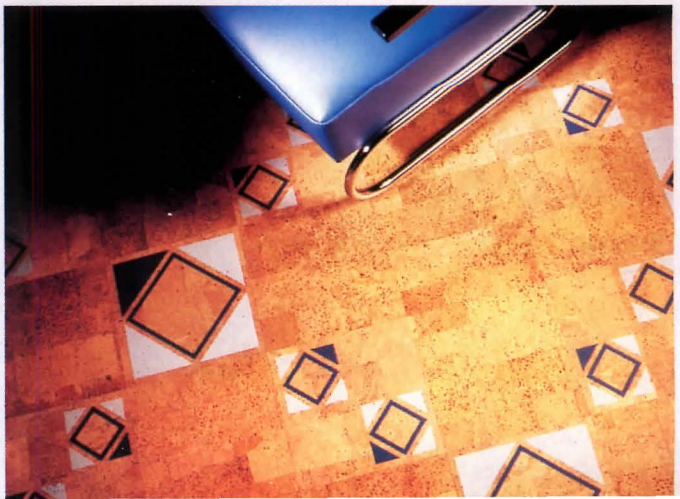
environmentally friendly cork adds warmth and beauty to floors

Cork, the bark of the Cork Oak, comes primarily from Portugal. Cork bark is harvested every nine years from the oaks, which then grow a new bark. Used since Roman times for sealing wine barrels and bottles, cork has more recently served as insulation for NASA's space shuttles. Frank Lloyd Wright pioneered the use of cork flooring in the U.S. at his Falling Water home in Pennsylvania. Today Ipocork Ltd offers cork flooring for museums, concert halls and other public spaces, as well as for private residences. The material is a lamination, including a vinyl backing, a cork cushion layer, and a thick clear vinyl wear layer. Offered in square tiles and planks, in a variety of natural cork colors and finishes.

Ipocork, Ltd., 1280 Roberts Blvd., Suite 403, Kennesaw, GA 30144; 800.828.CORK

"Human architecture" is the term used by Swiss architects, Christian Sand, to describe their design philosophy for the Quartz AG headquarters in Monchaltdorf. Cork floor tiles in Harmony and Natural shades.

Ipocork flooring is available in square tiles and planks.



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trompe l'oeil images on ceramic tile

Using state-of-the-art computer graphics, Imagine Tile has developed a process in which ceramic glazes act like inks. The result is a high resolution photographic image on durable ceramic tile. The tile surface can take on the appearance of virtually any image, from a grassy lawn to a babbling brook or a carpet of leaves. In addition to its stock images, Imagine Tile can reproduce virtually any graphic for brand or corporate identification.

Imagine Tile, 10 Exchange Place, suite 2010, Jersey City, NJ 07302-3913; 800.680.TILE

ceramic

Imagine Tile created a verdant lawn of tile that carries through the organic theme at the New York City health food restaurant, Pyramid Wrapps. Architect: Mayers & Schiff/EYP, New York City.

"Grass" one of the many stock designs available from Imagine Tile.

leather

leather floors soften the room ambience

Hand-crafted leather floor tiles from Edelman Leather are produced using a time-tested, traditional vegetable tanning and dyeing process selected on hides imported from Europe.

The leather tiles are specifically designed to live and flourish under foot and over time. Aniline dyes penetrate deep into the hide, yielding tiles that develop a mellow patina as the years pass. Colors get deeper and warmer with age, like those in a horse's saddle. Available in Natural, Dark Red, Dark Green, Brown, Black, and Rust., in a wide range of shapes and sizes.

Edelman Leather, Ltd., 28 Hawleyville Road, Hawleyville, CT 06440-0110; 203.426.3611

Leather floor tiles can be combined to form a wide range of geometric patterns.

Section editor, Jeff Hirsh, writes on many architectural, design and construction topics. His latest book, *Manhattan Hotels, 1880–1920*, was published this fall by Arcadia. He can be reached at HirshWords@aol.com or 212.564.2900. Section designers, Constantine Sauter and Olga Patiño, are at 212.564.2900.

archi

Kohn Pedersen Fox Charts a New Course

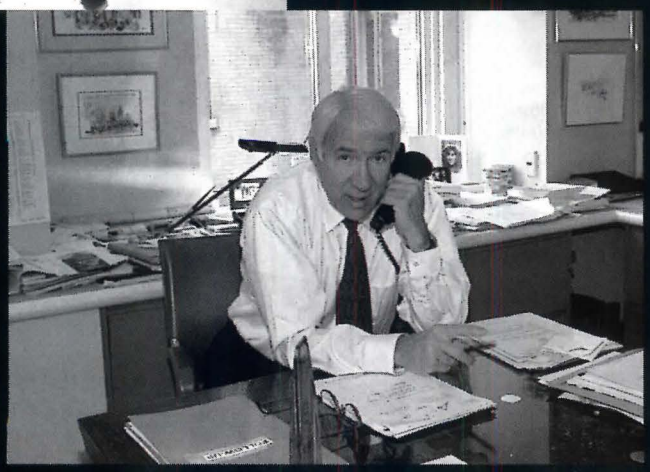
In the 1980s, the upstart New York architect Kohn Pedersen Fox Associates rose as high and fast as its signature skyscrapers. Then in the early 1990s, the commercial office market crashed, and the firm struggled to assert a fresh identity in a tight economy. In this issue, we examine the results of KPF's new focus: civic, institutional, and academic buildings, as well as Asian towers, that reflect how the firm is seeking larger territory under a new generation of principals.

KPF's new top tier (from left) includes Principals Paul Katz, Michael Green, William Pedersen, Gregory Clement, William Louie, Kevin Kennon, Peter Schubert, James Von Klemperer, and Eugene Kohn.

TOWERING AMBITIONS

By Bradford McKee

Kohn Pedersen Fox Associates is determined to recapture its 1980s glory under a newly named group of principals.



KPF Design Principal William Pedersen (above) sketches at his desk, while Eugene Kohn (right) keeps in touch with clients around the globe.

Before the 1980s speculative office-building boom bottomed out in the early 1990s, Kohn Pedersen Fox Associates (KPF) dominated the American high-rise market, bringing new moxie to the modern skyscraper. The New York firm's three founders, Eugene Kohn, William Pedersen, and Sheldon Fox, were the envy of their peers, successfully blending design, marketing, and management in one high-performance package. Indeed, KPF made hustling for commercial office-building projects seem glamorous—and respectable. "They became the Skidmore, Owings & Merrill of the 1980s," maintains architecture critic Paul Goldberger. "They were to the tall building in the '80s what Skidmore was in the '50s and '60s—the people who didn't invent form, but brought form to a much broader corporate audience, and at a high level of refinement."

KPF's excellent reputation for big, spec office buildings, however, worked against the firm in recent years. When the commercial market collapsed, KPF's record of slick, skin-deep skyscrapers handicapped its ability to compete for more complex public and institutional buildings.

KPF responded by diversifying its domestic portfolio, winning commissions for federal courthouses, university buildings, hospitals, residential projects, and an airport. At the same time, the firm started exporting its office-tower expertise to Asia, where the spec market was just starting to heat up. KPF had already launched into Europe with an office in London, which today employs 75 people.

Both strategies have reaped qualified successes: Institutional and public projects currently make up 14 percent of KPF's workload, and 34 percent of its work is in Asia, where incandescent economies seem on the verge of burning out. With these projects, KPF is christening some of its boldest buildings to date in the United States, as shown on the following pages, while breaking ground around the world on a stunning array of new work—including the world's tallest tower in Shanghai—that reflects

the maturation of its finely modulated architectural language. "They're trying to do the impossible," maintains New York architect Joel Sanders, who worked at KPF for a few years in the 1980s. "They are trying to bridge the gap between academic ideas and large-scale work."

Having found the firm's adult voice, KPF's visionary founders now face the toughest questions of their careers as they near retirement. Kohn, 65, and Pedersen, 59, said goodbye to 67-year-old Fox when he retired in January 1996 (Fox is succeeded by Partner Robert Cioppa). Since Fox's departure, speculation has swirled as to who, among their many talented acolytes, would succeed Kohn and Pedersen.

From 1981 to 1993, the founders had named seven additional principals, all more or less their contemporaries, but never a whole new group of successors. "Most firm founders in transition pick people not as good as themselves" to carry their firms onward, Kohn observes over a deli sandwich in the office. (This is a "quiet" day, he notes earlier, despite a morning meeting with Donald Trump, an audience with a *Fortune* magazine reporter, visits from CNN about the Shanghai groundbreaking, and an interview for a new Mercedes-Benz headquarters.) Kohn has observed his share of ownership transitions and formed a few theories: It's bad to pick successors who work right under their leaders, because they tend to be too deferential and lack entrepreneurial drive. It's best to "look further down the organization" for new leadership, to employees in their late 30s and early 40s, the age at which the founders made their break from the office of John Carl Warnecke Associates to start KPF on July 4, 1976. "They're the ones I think have the energy," Kohn maintains.

KPF's new leaders will need extraordinary energy to keep the 200-person firm on its celebrated path. The firm remains relatively small compared to tall-building competitors such as 750-person Skidmore, Owings & Merrill or Hellmuth, Obata & Kassabaum (HOK), with 1,790 employees. Though revenues sunk to $29 million in 1992, today the firm enjoys a glut of major projects: Nearly two-thirds of its estimated 1997 fees of $40 million flow from projects overseas. "Most of us—[César] Pelli, Skidmore, HOK—are working briskly away," asserts Daniel Dolan, design director of HOK in New York, "but KPF's pace is bewildering. For every two or three things I have at the modelbuilder's, they have seven."

Other observers see signs of strain as KPF tries to sharpen its high-minded esthetic while pursuing tougher building types and farther-flung projects. "When we started going to Asia," remarks a former KPF designer, "There was a shift in the scope of work we were able to do." On Asian projects, KPF seldom completes its own construction documents. Rather, it must hand off most projects and much control to local designers after design development.

Sustaining the firm's momentum calls for charging fearlessly into ever-more complex territory while keeping alive its agenda of investigative design. This imperative forces Kohn, Pedersen, and their fellow principals to scrutinize their ranks and figure out: Who has the talent to expand and enrich KPF's repertoire? Who has the guts?

Pedersen and Kohn announced the names their five new principals on September 3. The occasion was marked by a catered

Trudy Brens and Michael Sewell prepare alternative schemes for a master plan in Kyoto (below) before studio critique with Jerri Smith (below right). Marketing staff (below, far right) develops presentation for Mercedes-Benz competition.

cocktail party in the third-floor gallery of KPF's cluttered offices on Manhattan's West 57th Street, where Classical columns and snub-nosed moldings are whitewashed as if to disclaim the firm's Postmodern 1980s heyday. Practically the whole firm turned out, but nobody in the office claimed to know who the new group would be. Everyone stood in a circle as Kohn mastered the ceremony, and Pedersen philosophically reflected on the life of the firm.

The anointed five are all 40-ish men. Though women have comprised, on average, about one-third of KPF's staff, none of the firm's four senior female architects—Jerri Smith, Gabrielle Blackman, Jill Lerner and Bun-Wah Nip—joined the leadership. "It is definitely our intention to have female principals," Pedersen claims, but won't say when.

Of the new design principals, Pedersen explains that Kevin Kennon and Peter Schubert most closely reflect his own "theatrical" formal intuition, while James von Klemperer exhibits the tranquil, "analytical" approach of Design Principal William Louie. New Principal Paul Katz follows Kohn's path in marketing with a similar, sociable knack for winning decent work. And on the management side stands Michael Green, who coolly runs KPF's New York war room, dispatching design troops around the globe.

"The challenge for KPF," decrees New York attorney Barry B. LePatner, a Kohn intimate who deals frequently with ownership issues in architectural firms, "is to have the premiere design talent of Bill Pedersen, and one of the profession's main marketing gurus like Gene Kohn. They have an enormous body of work and depth of talent. The question is, can they keep it going?"

The answer is probably, if the successors recognize that KPF's success requires not a single key, but a combination; and if they maintain the firm's high-minded ethos that design comes before profits. "No one here has ever said, 'How can we make more money off this project?'" attests 13-year designer von Klemperer. "Though we have said, 'How can we lose less money on that project?'"

A religious commitment to design resounds throughout the informal, chaotic studios of KPF, which are awash in acres of yellow trace paper, shards of wood, bits of Plexiglas, stone samples, knives, charcoal, rulers, glue. Models crowd onto every available countertop; towers pop up unexpectedly behind computers and office dividers. Pedersen, a broad-shouldered athlete with a Calvinist temperament, wades into the workshops frequently, making rounds of various projects like a chef circuiting his kitchen checking the meat and sauces—spicing up certain parts of a design and mellowing others. The designer, contend his junior architects, tries to foster intellectual plurality, plumbing for new ideas while trying to maintain the consistency of KPF's Modernist language.

The firm plucks its neophyte designers mostly from the Ivy

Recent design/build projects for the federal government, such as Atlanta Federal Center (below) and Minneapolis Federal Courthouse (below right), with plaza by Martha Schwartz, force KPF to compromise investigative design process.

League, particularly Cornell; all newcomers enter on the strength of their design portfolios. Pedersen, assisted by fellow Design Principals Louie and Leventhal, steers these greenhorn temperaments along his own set course for the firm. "Bill sits down with everyone, and every opinion matters," notes 32-year-old associate design principal Gabrielle Blackman, who has worked at KPF for nine years. "His ideas filter down even to those designing the bathrooms."

True collaboration is the ideal to which Pedersen has long aspired—and achieved, says a former associate. But he seemed to lose patience with the cooperative ethos and sharing of credit in the early '90s. "The office went from a place where all talent was recognized," recalls one former staff member, "to a place where one person's talent was the most important"—meaning Pedersen's. In the past, KPF had the air of an academy, with a freewheeling circulation of ideas, but then became "focused on the efforts of the design principal," the former employee recounts. "And if you weren't in the design principal's direct orbit, you were marginalized."

The result is a work environment quickened by sizzling competition among the younger designers, all spying their colleagues' ideas and trying to outdesign each other to win their mentors' acceptance. "It's subtle, but you can feel it around the studios," remarks Associate Principal Tomas Alvarez, with raised eyebrows. "It's like, 'Oh, what's so-and-so doing over there? I've got to come up with something better.'"

A sense of "design envy" permeates KPF's pecking order. "The sense is that if you are a designer there, you have the fun job," says a New York architect who worked several years at the firm. "And everything else is secondary." Some outsiders have jealously noted that KPF has too much design talent under one roof, which theoretically breeds disaffection because not everyone can possibly rise to the top. Last year, for example, saw the departure of three longtime senior designers, Richard Clarke, Craig Nealy, and Gary Handel, all of whom had worked at the firm for more than a decade.

Buffalo Airport (above), to be completed next month, marks KPF's effort to diversify portfolio beyond high-rise office work. Transparent facade opens active mass of main terminal. KPF's repertoire also includes retail work, such as Sherman Oaks Bloomingdale's (right).

Pedersen, for better or worse, thrives on creative friction among his architects because it plays directly into his design strategy. The method he promotes is not neatly linear, but messy, artistic, doubting, and critical. Form takes precedence; three-dimensional modeling often begins before there's a program. Partis are elaborated time and again. Alternatives to alternatives emerge, and scarcely are any two details exactly alike.

KPF's restless quest to be inventive prompts some critics to call its work precious, overly elaborate, excessively customized. They also claim that KPF delivers high-class skin jobs to compensate for the banal internal biology of office buildings; that indeed, the studios Pedersen leads perform like obsessive couturiers chiefly concerned with correct cut and drape around 5-foot office modules. "People think we're stylists," admits Schubert. The styles are nonetheless quite sophisticated, though critics note KPF's consistency has been uneven. "They're all over the place," remarks Chicago architect Stanley Tigerman. "The 333 Wacker Drive building is one of the best buildings in this city, but their Postmodern work is mawkish."

Pedersen, a classically trained pianist, likens his compositional strategy for tall buildings to the inventions and fugues of Bach. What he calls his "two-part" towers, dating as far back as 1981, assume the formal dialogue found in Bach's inventions, in which two opposite voices are woven together in dynamic equilibrium. In the two-part building, Pedersen searches for balance in the counterpoint of opposing lines and volumes: heavy and light, rough and smooth, circle and square.

Unlike the fragmented fashions of Deconstructivism, the architect's designs do not blow forms apart, but synthesize by splicing and fusing together disparate parts

into a unified whole. The earliest example of the two-part tower occurred in an unbuilt 96-story tower proposed for Houston in 1981 known as Houston 265, whose duality lay in a north-facing, curved glass facade serving as the hypotenuse of a stone-clad right triangle facing south with smaller, punched windows to temper direct sunlight.

In retrospect, it is clear to Pedersen that he nailed down certain essential truths in those early years. The Houston 265 scheme contained the multiple identities and meanings Pedersen has sought in large buildings ever since. But he strayed from this strategy from 1982 to 1986. The firm adopted a Neoclassical style that was often ponderous, guided largely by Principal Arthur May. "A lot of people at KPF were doing historicism against their will," scoffs a former associate. Pedersen admits that major projects in the firm's Postmodern years weren't successful. "We didn't feel this strategy translated very well to large buildings. It became too powerful, like a Macy's Thanksgiving parade float."

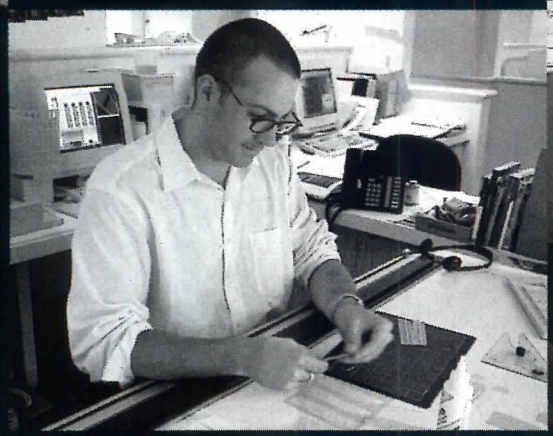
During a trip to India in 1986, Pedersen experienced his "epiphany" while designing the Mainzer Landstrasse 58 tower in Frankfurt. "The Frankfurt building really turned it all around," he recalls. For that project, Pedersen was trying to tame the mass of a very large skyscraper in the financial district while embracing the myriad character of the city around it. He divined what became a pivotal approach to the firm's later work: the "three-part" building, which, like a fugue, juxtaposes three distinct structural voices in harmony through repetition, imitation, and variation.

The Frankfurt tower's stone slab rises to 150 meters, marking the city's former height limit, and engages a muted, 206-meter mast. These two elements interlock vertically with a curved glass wall reflecting the commercial district, and climaxes in an unforgettable cantilevered crown trained toward the old city and the Main River. Pedersen has written that "it became a more humane representation for the tall building." The Frankfurt tower excited Pedersen's instincts anew, and a flourish of progeny brought huge artistic gains to KPF in the late 1980s, including the multifaceted, 47-story IBM tower in Montreal and the dynamic, 42-story Chifley Tower in Sydney, Australia, both conceived after Frankfurt and completed in 1992. These towers acknowledge context while importing a heroic sense of progress. With this recent work, "KPF has redefined the nature of the high-rise building," asserts New York architect Thomas Phifer, former partner of Richard Meier & Partners. "They've captured a wonderful new spirit."

But despite KPF's infatuation with its complex design grammar, the firm has simplified its recent work in Asia to address the visual anomie of burgeoning cities such as Shanghai and Seoul. The office has recently revived the context-driven abstraction portended in 1979 by 333 Wacker Drive in Chicago: angularly layered shafts with beveled edges, scale-enhancing notches, and receding silhouettes.

In Shanghai's Pudong district, KPF recently broke ground on the 92-story World Financial Center, set to be the world's tallest building at 460 meters. The site is surrounded by a gang of hyperarticulated skyscrapers, many American-designed, that have no sense of each other or their surroundings. Pedersen felt

KPF's design staff constantly work on physical models by hand. Nicholas Chin (below) refines the profile of Roppongi tower in Tokyo; Trent Tesch (below center) cuts and pastes for presentation. Manual methods mix with CAD, as Johannes Knoops, Mark Debrauske, and Douglas Hocking (below right) develop details for Roppongi tower.

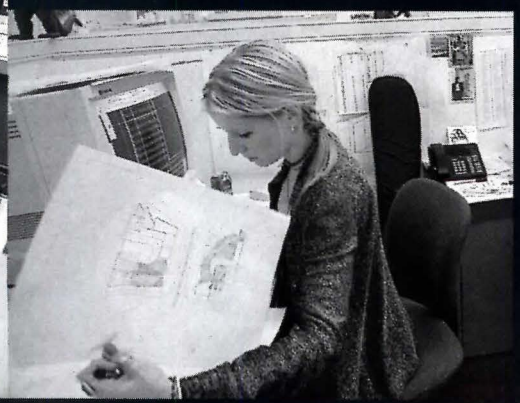


determined not to antagonize the skyline further with yet another messianic monument. Thus, he designed a building that dramatically changes profile, like a chameleon, as one moves around it. The tower's singular vertical shaft rises from a dense base and becomes gradually lighter as it reaches up toward its gigantic oculus die-cut from its 92nd-story attic. The pinnacle wears a simple curtain wall whose surface inflects modestly.

Like the Shanghai tower, the forthcoming Daewoo tower in Seoul, and the Taichung high-rise in Taiwan similarly change perspective in the round, from slender shafts to wider, curved and sculpted planes. Pedersen makes the case that these buildings are "contextual" even though there is no coherent context to draw from. It is a difficult argument to support. Rather, this new generation of towers suggests a shift from contextualism toward the current rave for sculpted, minimalist objects.

The probing nature of Pedersen's diverse formulas is pitifully lost on three more recent projects completed for the federal government under new design/build methodology: the Atlanta Federal Center; the new federal courthouse in Minneapolis; and the Internal Revenue Service headquarters in suburban Washington. The strain of the General Services Administration's design/build guidelines is obvious in less sophisticated massing, lower-grade materials, and inferior detailing. Pedersen savors his struggles, but does not want these projects published. "All my strategies have been very successful and very disastrous," he remarks frankly. "I try to hide the disastrous ones."

In KPF's crowded studios, Tony Song studies massing alternatives (top); Charles Ippolito and Kristy Graham collaborate on Wharton Business School (below); Cordula Roser completes diagrams of Manila tower (below right).

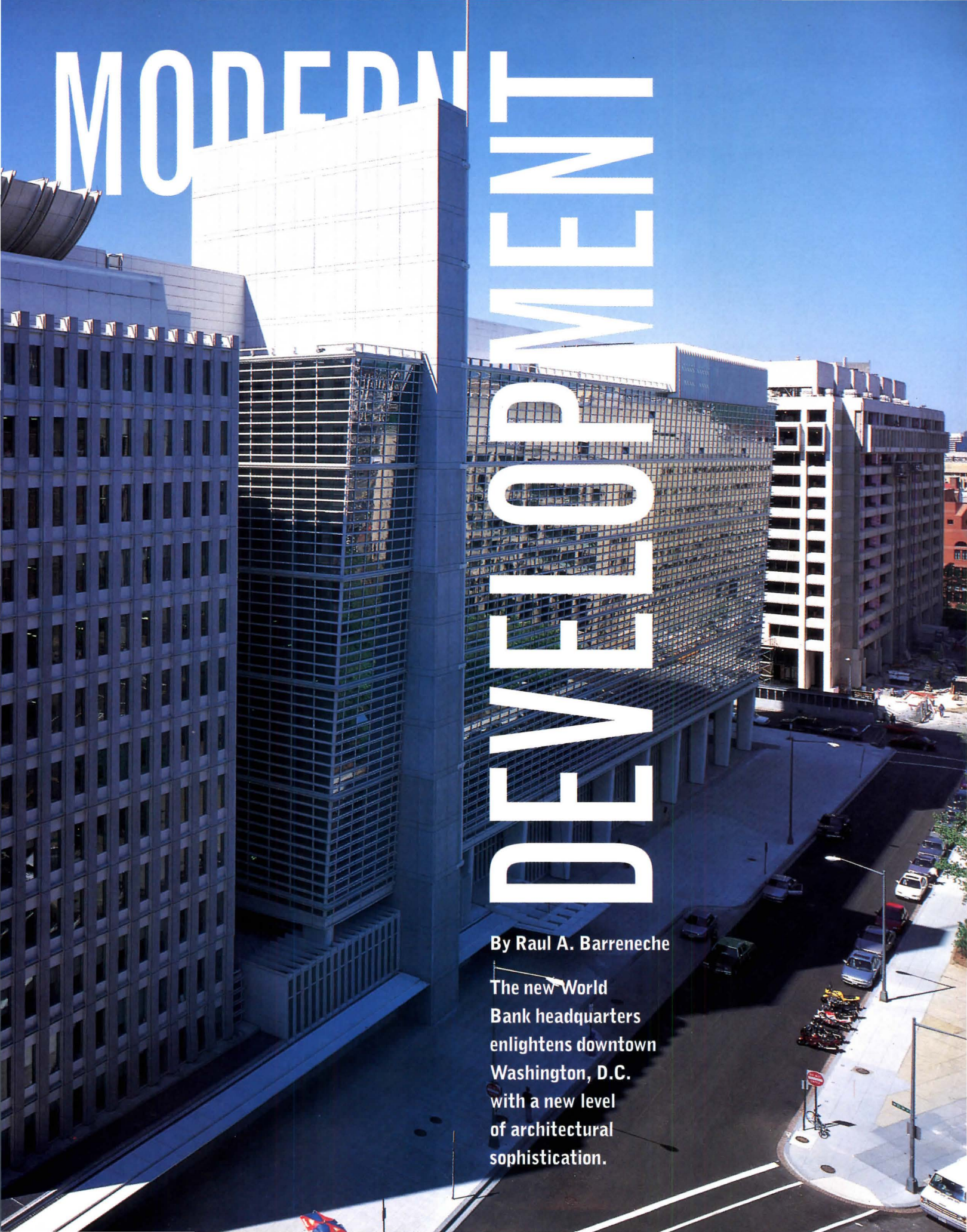


Selling Pedersen's stylistic realignments over the years has been the job of Gene Kohn, whose mercantile vision originally launched KPF and made all its high-profile design work possible. Kohn has had to show clients consistency when the firm was experiencing internal revolution. When Pedersen rediscovered Modernism in the late 1980s, May packed up his Classical convictions and took them elsewhere. KPF's overt historicism became a discontinued product. "I was never comfortable with Postmodernism" in the early 1980s, Kohn confesses. "Most of our buildings were simple and Modern, and all of a sudden we switched to a richer, heavier texture."

No matter the flavor, Kohn could sell ice cream in a blizzard. "It's tough to compete with Gene," concedes his friend, the architect M. Arthur Gensler of Gensler. "People think of him as a marketer, but he's a classy guy who understands how to run a business, and he's a fine designer in his own right."

Indeed, Kohn detests the idea of being some slick guy with a briefcase. "I am not enthusiastic about selling. I'm enthusiastic about architecture." Which is why he and his partners started their firm—they believed that "commercial architecture had been left to firms that didn't care about art." Though Kohn himself loves to design, he recognized right away that Pedersen made the strongest lead designer. An architect close to Kohn suggests he has "made a lot of sacrifices and compromises" to let Pedersen focus on design.

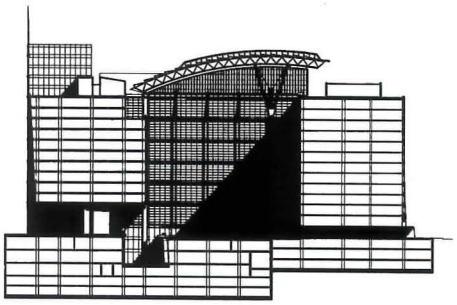
Few architectural firms—whether group practices or lone-star ateliers—will ever be able to capture and contain KPF's unique combination of esthetic fidelity and street smarts. Even Kohn and Pedersen must move on some day with the knowledge that theirs is a firm founded on good timing and very good luck. "It may take three people to replace Bill," claims Kohn. "Once we're gone, the question is, will the new group work together?" Kohn ponders. "Bill and I won't be able to know we've done it well until we're out of here."



MODERN DEVELOPMENT

By Raul A. Barreneche

The new World Bank headquarters enlightens downtown Washington, D.C. with a new level of architectural sophistication.

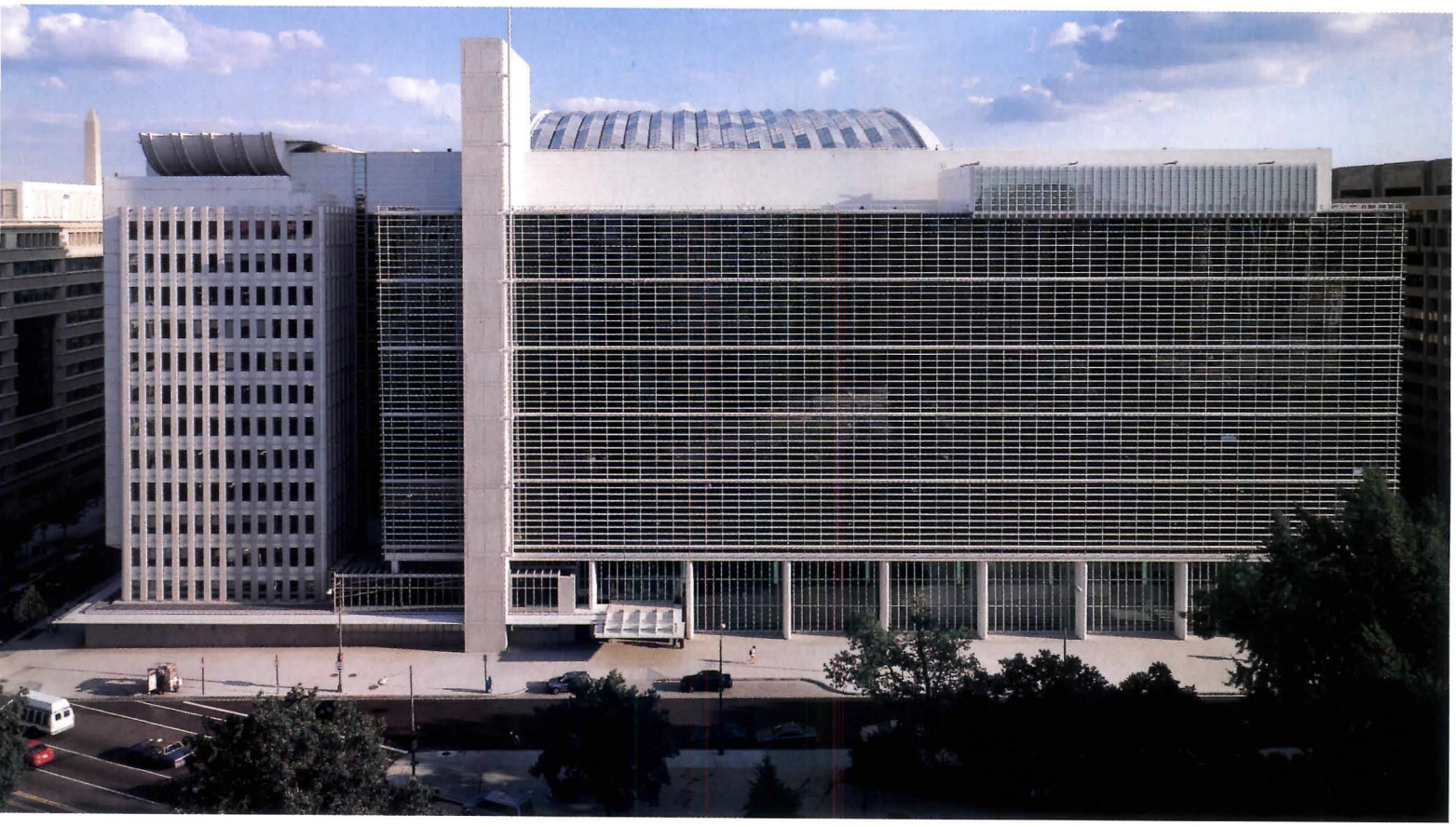


North-south section

Concrete-enclosed stair tower slices through canted glass wall of north facade (below). Metal canopy supported by tension cables marks primary entrance. Section reveals how daylight penetrates building core through south-facing skylight. Clear insulated glass curtain wall defines public gallery at northwest corner of building (facing page). Directors' conference room extends over top floor of offices.

"Washington is a city in denial of Modernism," claims Craig Nealy, former associate partner at Kohn Pedersen Fox Associates (KPF). But Nealy is only partly correct. Despite the long shadow that Classicism casts over the capital, Washington aggressively embraced Modernism in its heyday, as evidenced by buildings like Edward Durrell Stone's Kennedy Center for the Performing Arts (1971) and the of the Department of Housing and Urban Development headquarters (1970) by Marcel Breuer.

But these icons lie mainly within the city's monumental core, not in its commercial district, and it has been almost two decades since the last good Modern building—I.M. Pei's National Gallery extension—was completed. Now, the World Bank is filling that void with the opening of its gleaming new $314 million headquarters, designed by KPF. This contemporary building injects a welcome dose of transparency and light into its downtown environs, with a crisp public face sheathed in a reflective glass skin that conveys the new attitude of the institution.



Founded in 1944 to provide financial support to developing nations, the World Bank is busily reshaping its identity under the direction of President James D. Wolfensohn, who was appointed by President Clinton in 1995. Wolfensohn is trying to turn the bank into a more cooperative institution by forging stronger ties to other development agencies and the governments of the countries it aids. KPF attempts to translate this new mission into an elegant, crystalline architecture, but fails to create the connections to its surroundings that the bank is trying to foster with the world.

The bank's newly configured headquarters occupies a full city

block among dreary office buildings along Pennsylvania Avenue, just west of the White House. Over the past 40 years, the site had been filled in with an amalgam of office buildings. In 1989, the bank decided to raze the outdated structures and build a new home from scratch, sponsoring a design competition to which it invited eight architectural teams, including Arthur Erickson, Skidmore, Owings & Merrill (SOM), Edward Larrabee Barnes, and KPF. The jury—whose members included Parisian architect Jean Nouvel and former Architect of the Capitol George White—selected KPF's scheme primarily on the strength of the practical introduction of daylight to the almost 1.2 million square feet of new offices. The client also liked the architect's decision to build a post-tensioned concrete structure, since it allowed them to squeeze 13 floors of offices—a full story more than the other entrants—into the 130-foot building height dictated by city ordinance.

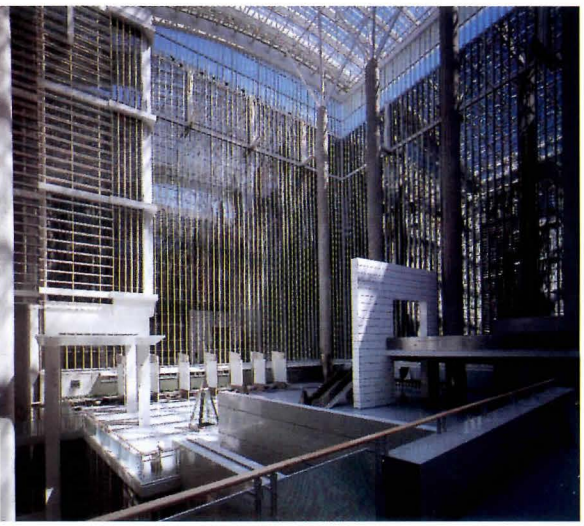
Unlike its competitors, KPF proposed salvaging two existing office buildings along the southern edge of the site: a 1969 design by Gordon Bunshaft of SOM, and a 1964 block by Philadelphia Modernist Vincent Kling. Although the boxy structures weren't spectacular works of architecture, KPF found their forms curiously inspiring: Bunshaft's building is punched with small rectangular windows that become more deeply recessed as the building's concrete frame thickens and flares out toward the street, while Kling's edifice is wrapped in a screen of thin concrete fins. "Our approach to the site was consistent with how the bank helps develop third-world countries," maintains KPF Design Principal William Pedersen. "They don't go in and try to restructure economies; they work with existing conditions."

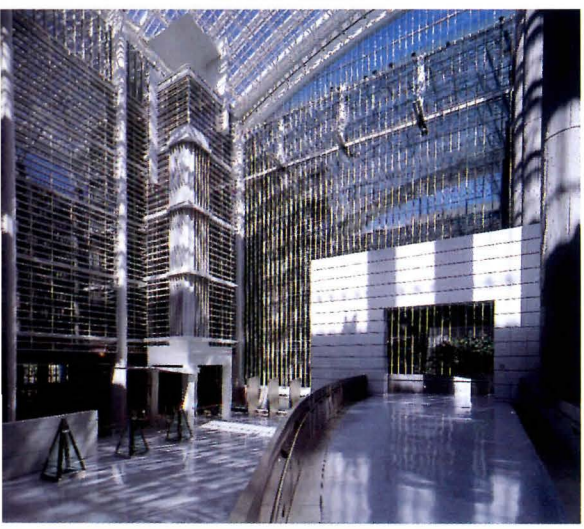
Onto the pair of existing structures, KPF grafted two new buildings and grouped them in a pinwheel arrangement around a monumental 13-story atrium, crowned with vaulted skylight to create a grand interior room. By tilting the skylight and inserting a south-facing clerestory, the architect brings daylight down to the basement cafeteria through a light well carved into the atrium floor.

Aside from meeting the pragmatic concerns of light and space, the new bank headquarters conveys a sense of monumentality without reverting to obvious Neoclassical references. Bank officials explicitly asked KPF to avoid columns and capitals, since they might recall third-world colonialism. Instead, KPF developed a controlled, collagist composition of interlocking volumes and textured planes that doesn't stray too far from Classical ordering systems: The building maintains a clear tripartite organization of base, middle, and top, for example, and its details are derived from modulated proportional systems.

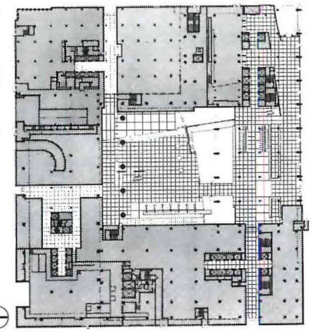
The bank's most elegant face is the principal north elevation along Pennsylvania Avenue. Here, a monumental metal canopy suspended from tension cables marks the main entrance to the complex, ushering visitors into a public gallery. The gallery is enclosed by a double-height curtain wall scored with pronounced vertical mullions, stretched between angular white *pilotis*. A huge, angled glass wall accented by horizontal aluminum fins projects beyond the *pilotis* and seems to hover above the sidewalk. On clear days, the reflection of a brilliant blue sky makes the glass all but disappear behind the thin white mullions; on gray winter days, the skin becomes solid and heavy, taking on the steely hue of granite.

Against this giant ground, Pedersen expresses key functional



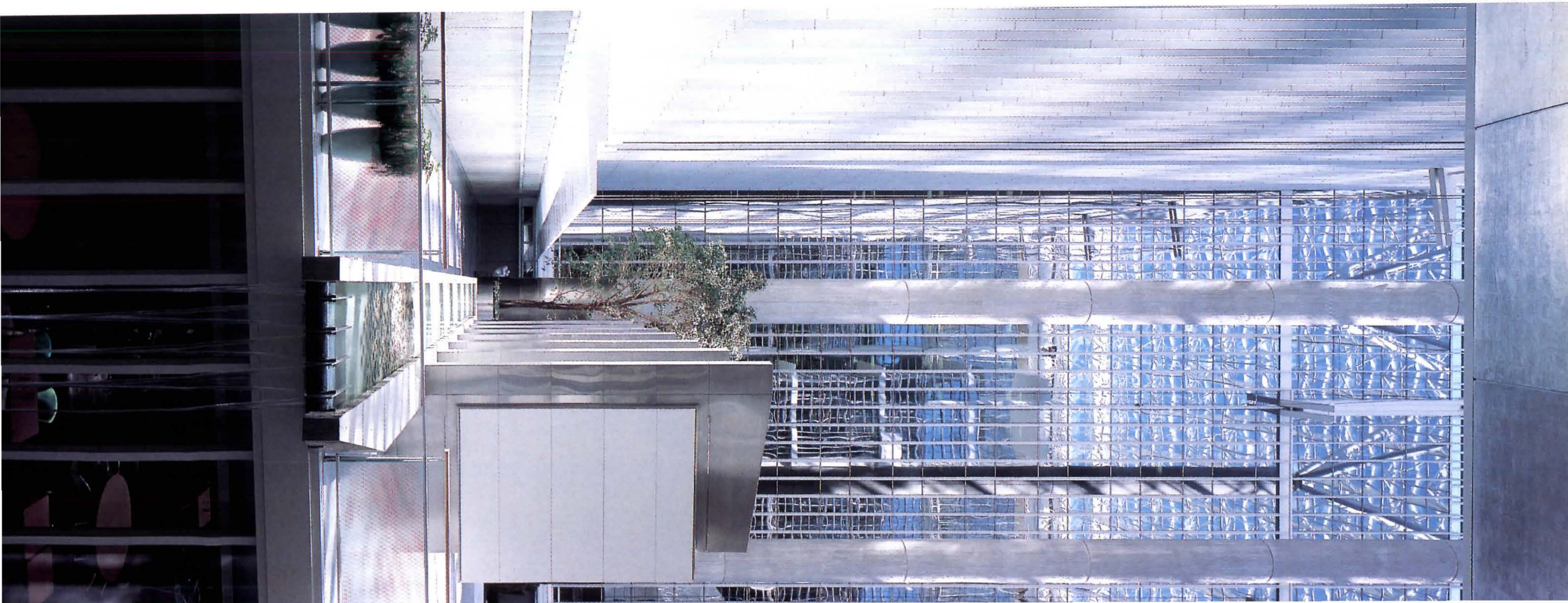


Splayed steel struts atop 13-story concrete columns support vaulted skylight over 150-foot-by-150-foot atrium (top). Vertical mullions punctuate mirrored glass walls enclosing south and east facades of atrium; horizontal fins distinguish north face (bottom). Tower projecting from north wall houses conference rooms. Steel staircase leads to balcony at south end of atrium; aluminum partitions define seating areas along pool (facing page).



Ground-floor plan

Concrete pilotis supporting north flank of offices extend into basement-level reflecting pool (left). Subterranean cafeteria and travel office flank light well and pool below atrium (right). Plans reveal pinwheel arrangement of offices around central atrium.



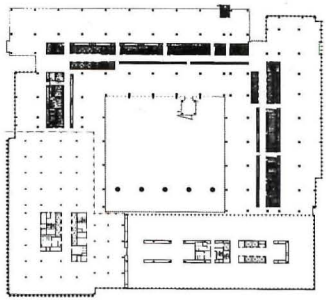
nodes as idiosyncratic figures, breaking them free of the box to animate the building's profile. A concrete-enclosed stair tower, edged with a flagpole, punctuates the center of the facade like a giant exclamation point; the glazed box of the directors' conference room wraps over the top floor of the canted glass plane; and a two-story board room sits atop the roof, crowned by a sculptural metal scoop that inversely echoes the vaulted skylight above the atrium. Pedersen keeps the discrete forms from unraveling across the whole of the building by maintaining tripartite divisions and modular proportions.

These variations and volumetric shifts successfully break down the mass of what could have become inhumanely monolithic—the building, after all, comprises 2.1 million square feet of offices on 13 floors (1.2 million square feet is new construction; the remaining 900,000 square feet is renovated office space), plus three cafeterias with seating for 1,500, a printing office, and a travel agency below grade. But the variations in form and texture, particularly on the building's side elevations, are excessive: On the east face alone, there are seven different types of curtain wall.

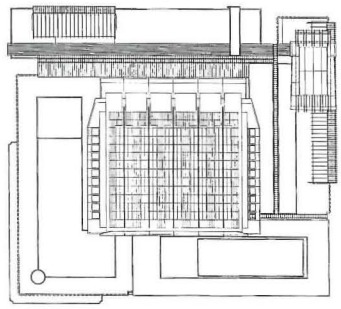
The north elevation remains icily detached from the neighborhood, without so much as a tree along its main elevation to soften the building's hard edges. The ground levels of the south and east facades don't engage the street, since much of the concrete base wrapping the perimeter encloses emergency exits from the basement cafeteria. This solid concrete plinth is dotted with custom vitrines that were designed to hold posters, but they remain empty. As a result, the building conveys an imposing, impenetrable attitude at ground level, despite all its glazed transparency above. "I think we screwed up a bit," Pedersen admits. "We were too abstract at the ground zone." For all its streamlined brilliance, the building casts a discernible chill on the neighborhood.

And the appearance of openness suggested by the canted glass facade on the north ends abruptly: Just a few feet beyond the north facade lies an imposing security desk, a metal detector, and a barricade of shiny steel turnstiles. Those lucky enough to pass muster experience the building's symbolic and functional heart: the 22,500-square-foot atrium, a dazzlingly bright and energetic space, made all the more brilliant by the abundant daylight that floods the space through the glazed vault. The only unfortunate aspect of this dramatic, daylit room—among the most invigorating in the city—is that it's off limits for most Washingtonians, except during occasional public concerts. Like the exterior elevations, the atrium is also enclosed with curtain walls patterned with constantly shifting mullions, to dizzyingly repetitious effect. As a result, surface competes with space for visual dominance.

The World Bank suffers from overzealous detailing and an inhospitable street-level presence. But the building's sophisticated and streamlined style is a welcome change for Washington: It elevates the standards of private-sector buildings in the city, reaffirming the role of Modernism in the capital.



Typical floor plan



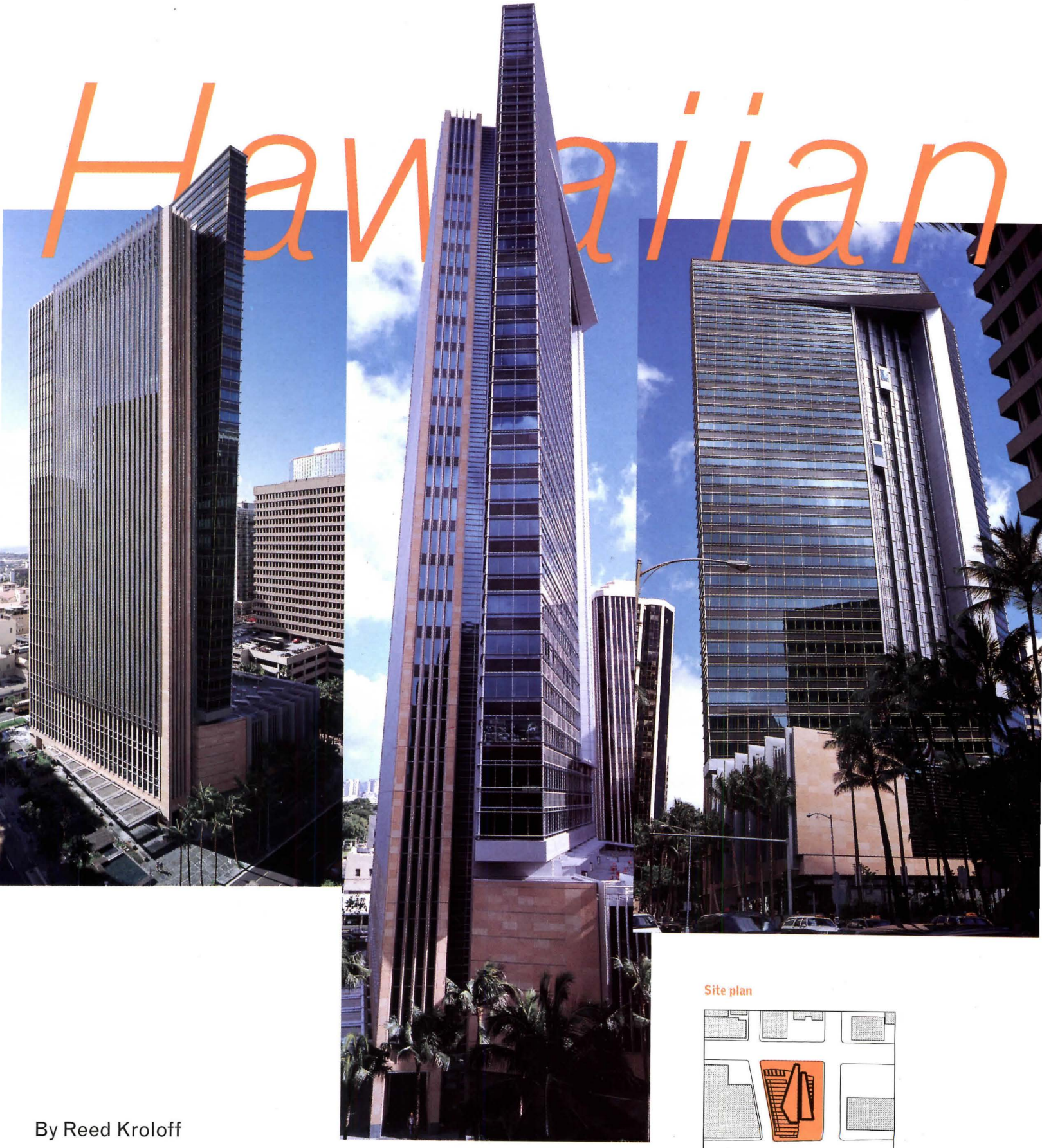
Roof plan

THE WORLD BANK
WASHINGTON, D.C.
CLIENT: The World Bank Group **ARCHITECT:** Kohn Pedersen Fox Associates, New York City—Sheldon Fox, A. Eugene Kohn (project principals), William Pedersen (design principal), Craig B. Nealy (team leader), William H. Cunningham, Thomas Holzman (project managers), Joseph P. Ruocco (coordination leader), Peter Schubert (competition team contributor), Robin Autoned, Dayo Babalola, Pavel Balla, Vladamir Balla, Joseph Barnes, Mark Barnhouse, Gabrielle Blackman, Nathan Clark Corser, Suzanne Cregan, Cynthia Crier, Glen DaCosta, Eric Daum, Anthony DiGrazia, Dominic Dunn, Valerie Edozien, Mark Fiedler, Robin Goldberg, Armando Gutierrez, Fia Hekmat, Angeline Ho, Koichiro Ishiguro, Sulan Kolatan, Judy Lee, Ming Leung, Jenny Ling, Michael Martin, Kristen Minor, Nicole Mronz, Beth Niemi, Hun Oh, James Papoutsis, Paul Regan, Duncan Reid, James Seger, Esmatollah Seraj, Audrey Shen, Frank Shenton, Enil Stojakovitch, John Stolze, Hisaya Sugiyama, David Thompson, Thomas Vandenbout (project team) **LANDSCAPE ARCHITECT:** Rhodeside & Harwell **ENGINEERS:** Weidlinger Associates (structural); Flack & Kurtz (mechanical); Jaros Baum & Bolles (electrical); Loiederman Associates (civil) **CONSULTANTS:** Kresscox Associates (interiors); Jerry Kugler Associates (lighting); Shen Milsom & Wilke (acoustics, audiovisual); Carbone Smolan Associates (graphics); Joseph Baum & Michael Whiterman Company (food service); Harmon Contract W.S.A. (curtain wall) **GENERAL CONTRACTOR:** Clark Construction Group **COST:** $314 million **PHOTOGRAPHER:** Timothy Hursley

Going

A 27-story banking headquarters by Kohn Pedersen Fox
ups the ante for high-rise design in Honolulu.

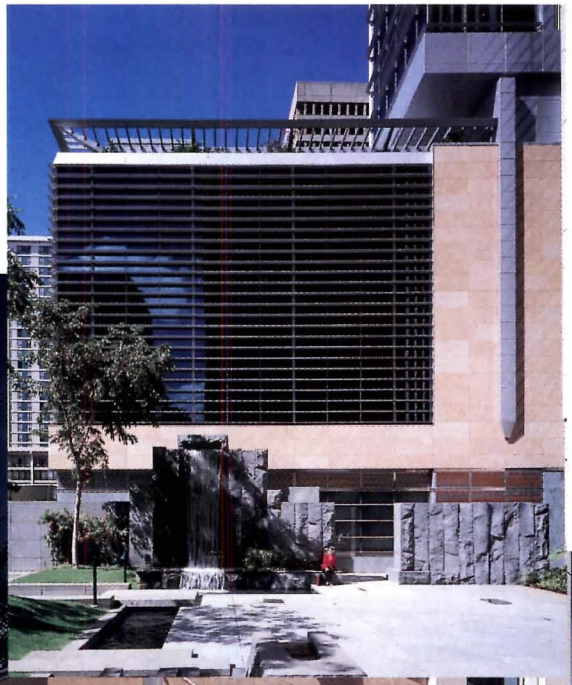
Hawaiian



By Reed Kroloff

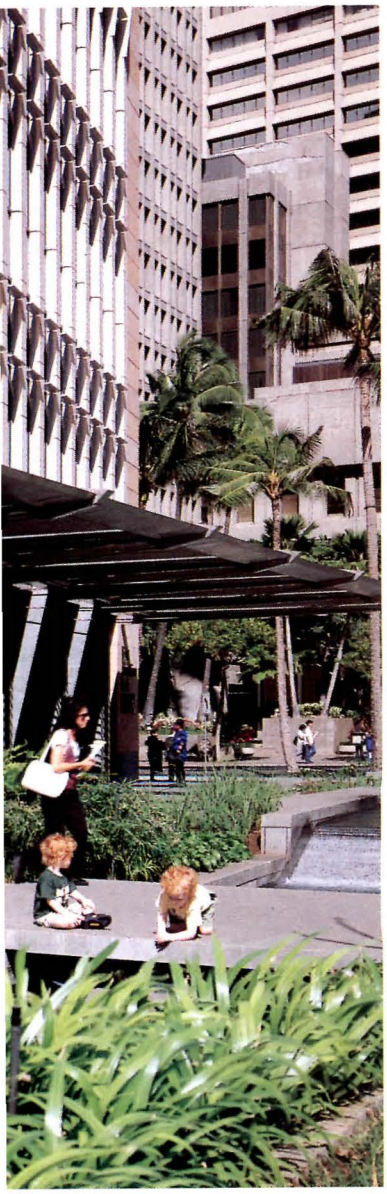
Site plan

Retail banking offices at northeast corner of five-story base are sheathed in glass and limestone with aluminum accents (right). Ground-level restaurant fronts landscaped plaza.



Stainless steel canopy sweeps above landscaped court at tower entrance. Forty-three percent of building site is open space landscaped by Walters Kimura Motoda (below).

Wall of banking hall is fitted with James Carpenter-designed dichroic glass atop continuous concrete beam. Four-foot-deep aluminum fins and mullions shade glass (above).



The $175 million First Hawaiian Center tower, designed by Kohn Pedersen Fox Associates (KPF), is the best tall building in Honolulu, but that's not saying much. Most high-rises in Hawaii's capital of 850,000 occupy a narrow range between forgettable and regrettable. Frequently the progeny of offshore architects and developers, these buildings ignore Honolulu's mountainous landscape and local culture, instead keeping their eyes firmly fixed on the bottom line. Local architect Dan Chun sums up the imports as "the latest form of colonialism."

Initially, First Hawaiian Bank might be viewed the same way. After all, the bank razed its former historic headquarters to make way for KPF's sleek, 412,0000-square-foot tower. According to First Hawaiian CEO Walter Dods, the five-story, Neoclassical Damon Building, designed by local architect J.M. Young, "wasn't particularly Hawaiian or historically unique." Not everyone agreed: local preservationists staged a seven-month battle to save the 1925 landmark. First Hawaiian won, but at the expense of time, money, public support, and one of the few remaining pieces of Honolulu's architectural heritage.

The bank's new 27-story tower isn't particularly Hawaiian either, although it responds thoughtfully to site conditions and at least acknowledges local culture. Its striking design is the latest iteration of New York-based KPF's sculptural strategy for high-rises, which recalls the experimentation of early 20th-century Cubists and Constructivists and attempts to make large urban buildings less overwhelming. Design Principal William Pedersen breaks the mass of a tower into smaller pieces that are modified by the surrounding urban fabric, yet remain compositionally integrated. The constituent parts respond to forces ranging from view corridors to street patterns, what Pedersen calls the "pressures of context." He suggests "the form of the building reflects these pressures as well as those of program." Form is not strictly a result of function.

For First Hawaiian, Pedersen and Design Partner Peter Schubert transformed a 435-foot-high tower into two trapezoidal office blocks that sandwich a narrow rectangular service core, and surmount a five-story podium housing the lobby, retail banking functions, and a restaurant. The trapezoids are distinguished by their curtain wall and trim patterns, while the base is clad in French limestone and glass, accented by wide expanses of aluminum.

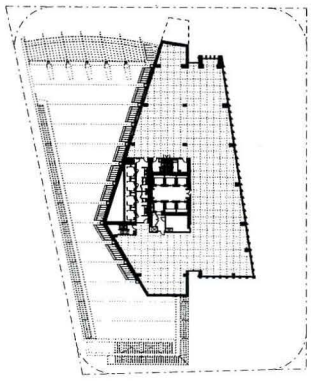
The architect achieved coherence by repeating materials among volumes while maintaining a consistent linearity in the detailing. Thus, limestone trim along the tower's north flank also wraps the west side of the ground-level banking hall. Vertical stainless steel fins mark the bank's southwest corner; they reappear as razor-thin louvers higher up in the building. There is complexity in First Hawaiian's composition, but consistency as well.

Subdividing the tower into distinctive slabs diminishes the building's apparent mass. It also enhances verticality: The eye races from the ground to the sky on each of the building's three sections, rather than only one. The elegant thinness of each slab has an attenuating effect like that of a Giacometti sculpture. Furthermore, the building actually is taller than it might have been: First Hawaiian and its developer, the Myers Corporation, persuaded the Honolulu City Council to scrap downtown's 350-foot height limit in favor of a new 450-foot maximum. With no corresponding horizontal increase, the 25 percent vertical boost further slenders the building's proportions, a welcome contrast to the knot of graceless glass and concrete boxes that surrounds it.

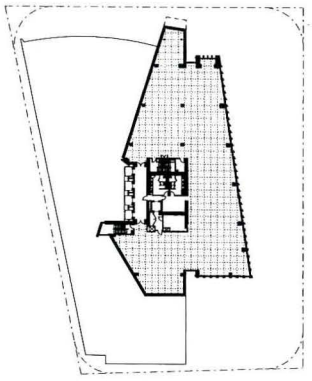
Pedersen's contextual response begins by canting the tower's flanks off the urban grid just enough to form a distinctive profile from a variety of angles, and to allow views of the water and mountains beyond. The building fronts prominently on Bishop Street, long the center of commerce in Honolulu. The street is named for Hawaiian royal family member Bernice Pauahi Bishop and her husband, Charles, founder of the company that would later become First Hawaiian Bank. KPF notes this significance with a dramatic gesture that gives form to First Hawaiian's dominant role in Honolulu's mercantile history: the edge of one of First Hawaiian's narrow trapezoids cantilevers at an angle toward Bishop, making the building appear to lean over the street.

According to Pedersen and Schubert,

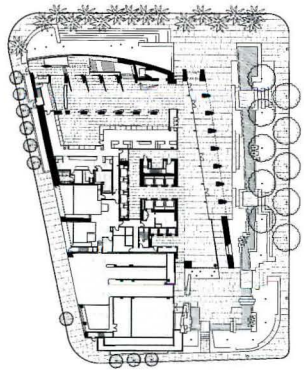
James Carpenter-designed glass wall illuminates ceremonial stair in three-story banking hall that also serves as gallery for Contemporary Museum of Honolulu.



Typical floor plan



Second-floor plan



Ground-floor plan

Hawaii's dramatic juxtaposition of land and water drove the design of the tower's complex curtain wall patterns, which are vertical on the elevation facing the mountains, and horizontal on the elevation that faces the water. This distinction, the architects claim, reflects the "the relationship of the mountains—vertical—to the water—horizontal, that colors one's perception of the island." Although skillful, this abstraction is too subtle to make the local connection. Further, the device reappears in KPF's proposals for the Morrison tower in Portland, Oregon, and the Warsaw Bank Center in Poland, straining the architects' claim to its local derivation.

In other ways, the building tries to "go Hawaiian," with varying success. KPF playfully yet intelligently references Hawaiian cultural artifacts in its decorative language. For instance, Polynesian architecture's tradition of delicate screen-wall construction appears as the closely spaced verticals of the north-facing curtain wall. The bank's richly textured, low-ceilinged lobby is lined with sculpted maple fins, an analog to bamboo fences. Fixed wooden screens also line the upper levels of the banking hall.

The three-story banking hall comprises a soaring, light-washed rectangle finished in panels of pear and anigre woods, Arabascata marble, and acres of stainless steel. Spectral slices of light refract through an extraordinary faceted curtain wall by glass artist James Carpenter (*Architecture*, December 1996, pages 107-115). A boomerang ceiling-of-light and boat-shaped chandeliers suggest additional Hawaiian motifs, but also vividly recall 1950s Modern design, combining the jackknife and streamline motifs that characterized the lobbies of Morris Lapidus and Eero Saarinen.

This spectacular room is CEO Dods' effort to compensate for the demolition of the Damon Building, and his contrition doesn't stop with the architecture: Dods invited the Contemporary Museum of Honolulu to open a satellite gallery in his new banking hall, and now underwrites its exhibitions. While it is visually impressive, the vigorous room is only moderately successful as a gallery. Art on the lower level is displayed on adjustable panels attached to dramatic, towering columns, but the rest of the collection is hidden away on the second floor in a hallway that doubles as a fire exit. Even the art on the ground level is no match for the expansive volume, sensuous materials, and tour-de-force detailing of the architecture. Only Carpenter's astounding, wall-size window manages to hold its own. Nevertheless, the branch bank-cum-art gallery is a genuine civic amenity—a dynamic public space enhanced by a regularly changing art collection.

First Hawaiian's banking hall, its exotic materials, and its esthetic sophistication combine to make the building a welcome addition to downtown Honolulu. Yet despite its good looks, First Hawaiian ignores basic regional issues that could have more meaningfully tied the building to its place.

For instance, large Hawaiian buildings—from hotels to shopping centers—are often completely open on the ground level, allowing breezes and people to pass through. This informality is in keeping with local culture—Walter Dods and his employees wear flower-printed shirts to work—and the blessings of a benign climate. Although a large, heavily landscaped plaza flanks First Hawaiian's entrance, the building is sealed up tightly on all sides.

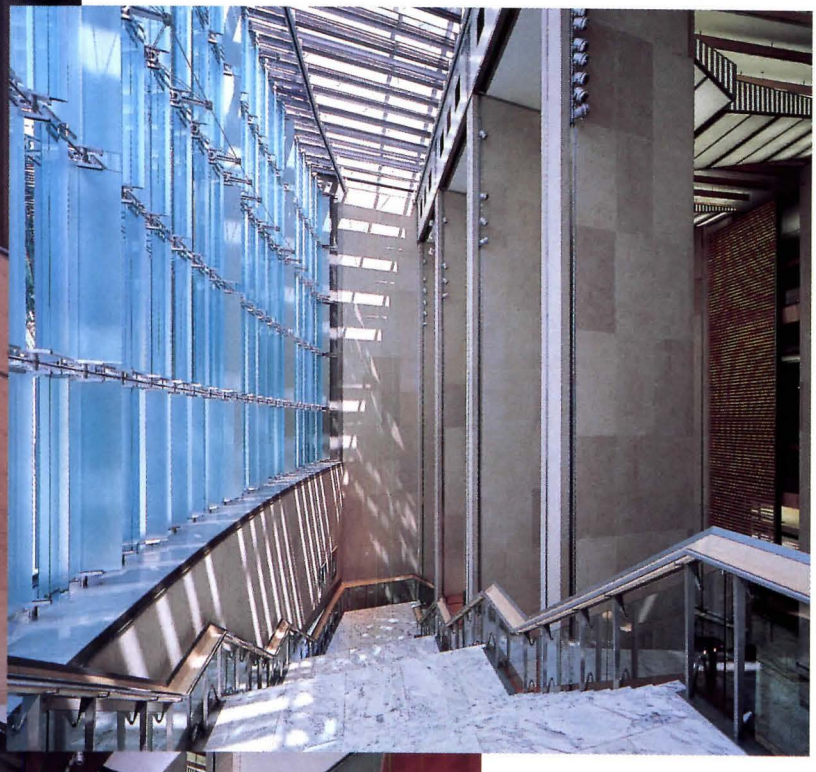
Further, First Hawaiian's response to climate is minimal. Its elaborate fins and louvers do little more than provide visual sparkle. Other than the entrance, there is only one place for employees to step outside the building. And despite favorable weather nearly year-round, KPF chose not to push the envelope of high-rise design to give the tower operable windows.

At First Hawaiian, KPF's elegant composition significantly ups the esthetic ante for commercial structures in Honolulu. But in ignoring climatic precedent the architect misses an opportunity to push modern high-rise design into a truly regional realm.

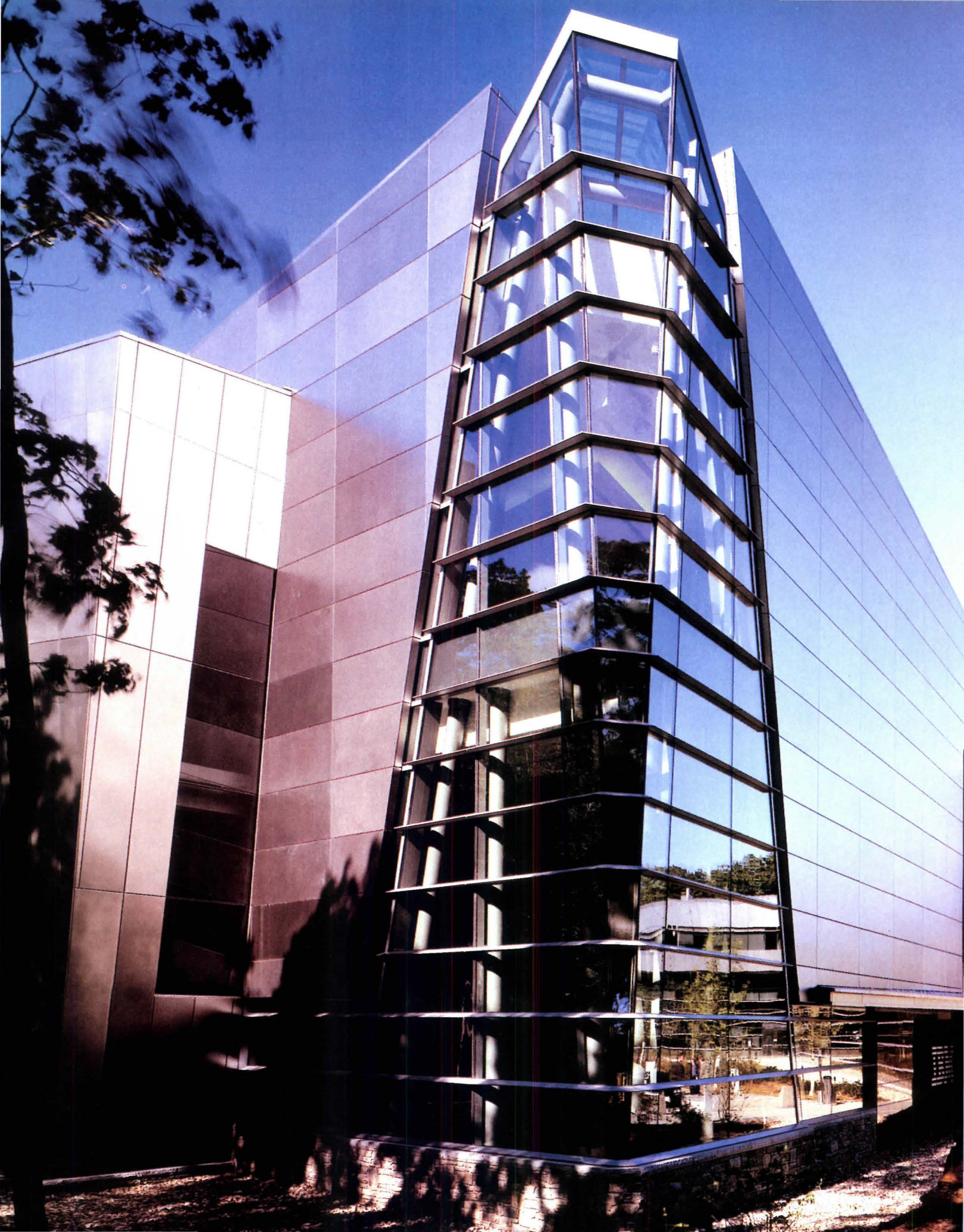
FIRST HAWAIIAN CENTER
HONOLULU, HAWAII

CLIENT: First Hawaiian Bank **ARCHITECT:** Kohn Pedersen Fox Associates, New York City—William Pedersen, Peter Schubert (design principals), Deborah Booher, Kristin Minor, Bun-Wah Nip (coordination leaders), Charles Alexander (project manager), Michelle Biancardo, Barbara Bures, Celia Chiang, Carey Chu, Irvin Glassman, Robert Goodwin, Armando Gutierrez, Thomas Hernandez, Merrie Hevredej, Barbara Lewandowska, Malvina Lampietti, Elaine Newman, Molly McGowan, Marcie Moss, Ichiro Oda, Dex Ott, Glenn Rescalvo, Erica Schmitt, Audrey Shen, Joseph Spada, Paul Tarantino (project team) **ASSOCIATE ARCHITECT:** Luersen Lowrey Tsushima, Honolulu—Dwight Lowrey (principal-in-charge) **LANDSCAPE ARCHITECT:** Walters, Kimura, Motoda **ENGINEERS:** Martin & Bravo (structural); Beall & Associates (mechanical); Moss Engineers (electrical); Belt Collins Associates (civil) **CONSULTANTS:** Hayden McKay Lighting Design (lighting); Shen Milsom Wilke (acoustics); James Carpenter Design Associates (glass); Calori & Vanden-Eynden (signage) **GENERAL CONTRACTOR:** Fletcher Pacific Construction **COST:** $175 million **PHOTOGRAPHER:** Timothy Hursley

Art is displayed on pear wood and stainless steel panels affixed to towering columns in banking hall. Light floods space through skylight and Carpenter's 48-foot-high-by-100-foot-long double-membrane glass wall.



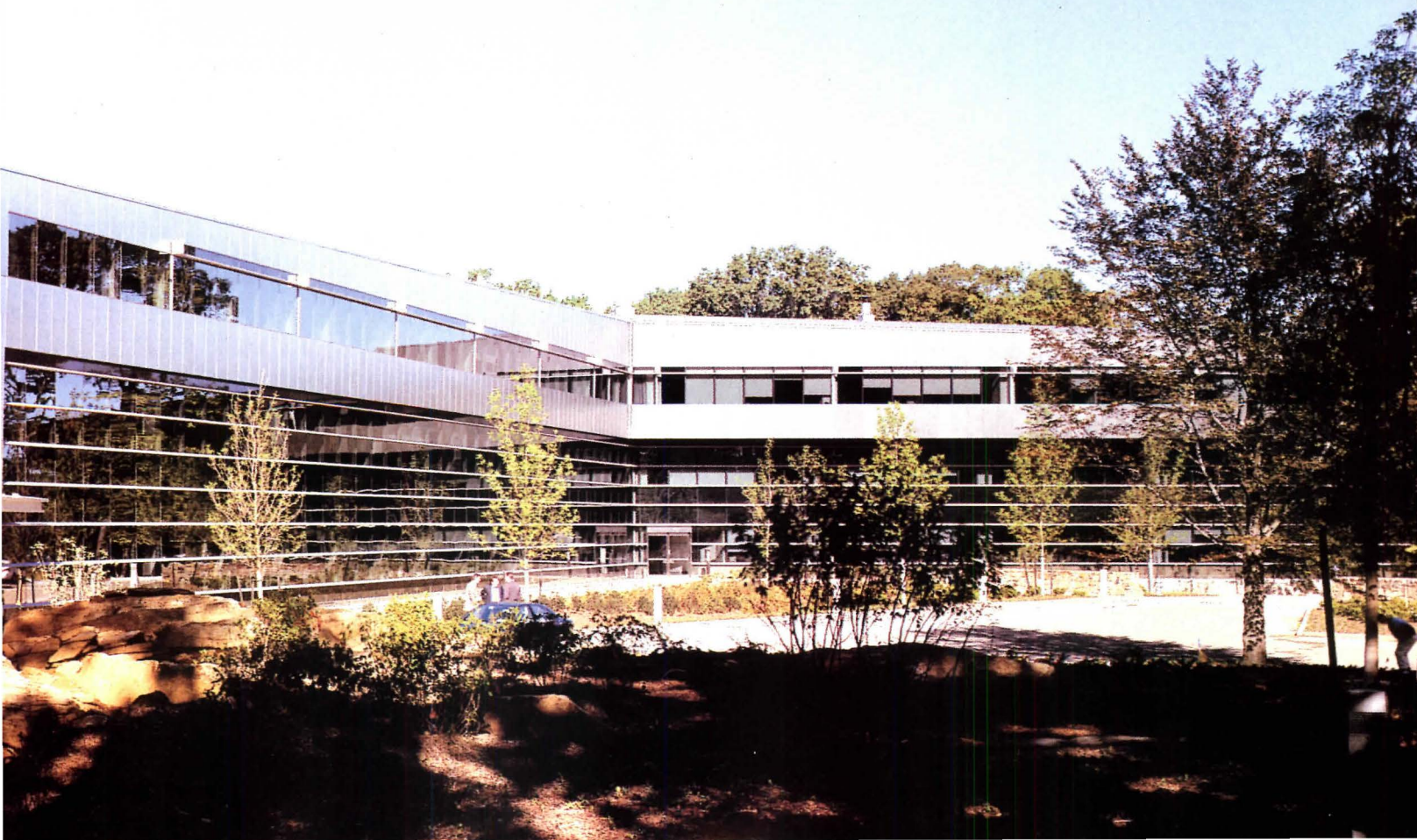
Grand staircase is cantilevered from single, continuous concrete beam, and leads to upper gallery and retail banking offices (left). Carpenter-designed glass wall, supported by aluminum and stainless steel armature, changes color of room throughout the day.

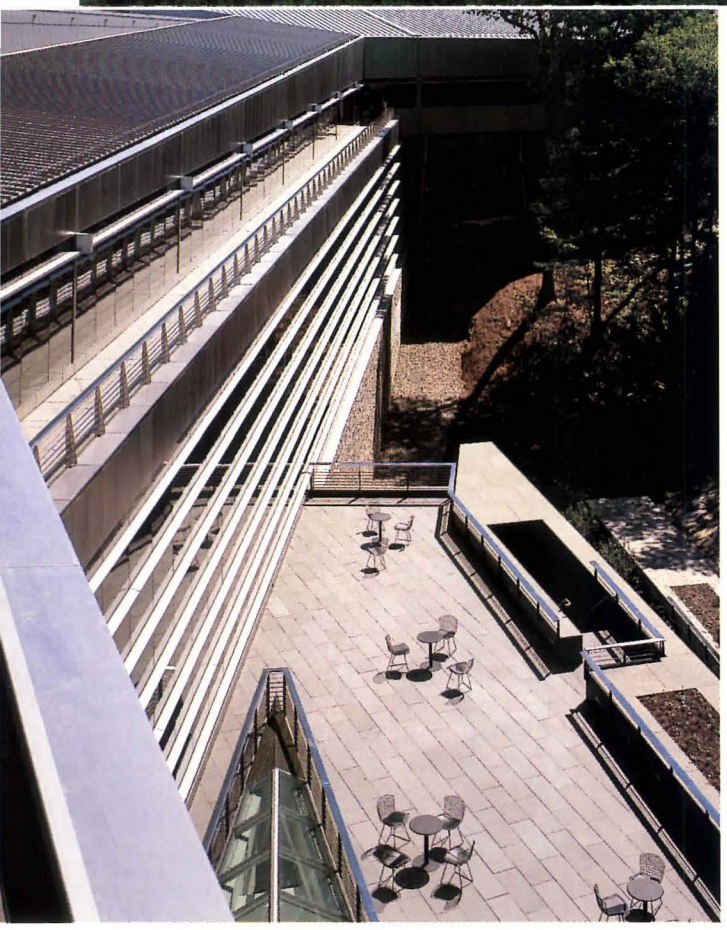


CORPORATE METAMORPHOSIS

Kohn Pedersen Fox's dynamic headquarters for IBM mirrors the transformation of Big Blue into a company predicated on change.

By Joseph Giovannini





Like a Swiss Army knife, blades of IBM headquarters (top) unfold from building into surrounding woods, where landscaped parking lots follow contours of hillsides. Third-floor executive terrace on south facade (above) overlooks ground-floor terrace and ravine. Rear terrace (facing page), located off lobby leading to cafeteria, serves as company piazza.

Not long after Kohn Pedersen Fox Associates (KPF) won a competition to design the new IBM headquarters in 1994, the computer giant's CEO Louis Gerstner, Jr., announced the company would no longer require white shirts and ties at work. It was a change symbolizing an era of corporate self-assessment.

In its soul-searching spirit of retrenchment, IBM sought a building scaled down for its trim, 500-member team, one with fewer offices and more customer meeting spaces. IBM representatives, in fact, said they wanted a building so straightforward it would probably never be published. They felt the 1964 headquarters in Armonk, New York, was a structure unsuited to the lean soul of the new company: too big and inflexible. The stiff geometries —a squared double doughnut in plan by Skidmore, Owings & Merrill (SOM) with Isamu Noguchi gardens filling the holes—fit the old, imperial Big Blue, but not the new Flex Blue.

Gerstner rejected his own professed preference for *Brideshead Revisited* architecture in favor of a building better-suited to the progressive image of an efficient, collegial organization—one that would also express IBM's new high-tech needs and its role in advanced technology.

KPF's impressive portfolio of high-rise and institutional structures also reflected a corporate change: nine years ago, Design Principal William Pedersen designed a private house in Vermont. In the original, most lush iteration, he spun the wings of the Carwill House to respond to the views and topography. Two pavilions, one for the entrance and another for exercise, pinned down the otherwise free-wheeling wings. As in his urban work, the design was contextually sensitive, but the cues were taken from nature rather than from other buildings.

In Armonk, Pedersen and his design team, headed by Senior Associate Partner Jerri Smith and Associate Partner Douglas Hocking, faced a virgin site. But unlike SOM, whose architects leveled the top of a hill, KPF adapted its design to the ridges and ravine of the site, just downhill from the older building. The 45-foot height limit and the typical 30-foot depth of the cores from the windows basically determined the size of the footprint for the three-story, 283,000-square-foot office structure.

But after investigating a long bar spanning the ravine, and a C cupping it, they twisted one arm of the C backward to form an S, so that the two arms, pointed in opposite directions, are hinged off a central torso. Simply by bending a block out of symmetry, the architects took the parti out of architectural self-containment and opened it to the site—without the sentimentality of an earth-hugging design. One arm gestured to the ravine, and the other toward the courtyard entrance and parking lot. The asymmetrical and dynamic geometry followed the ridge lines, with the compound slopes of the roof folded to stay within the 45-foot height limit required by zoning.

Several things happened when Euclid acceded to nature. The building no longer stood alone as a "white" object, but as one with the potential for weaving through the hills, establishing a reciprocity between the man-made and the natural. Formally ambiguous, the S was partially an object, yet it could embrace outdoor space. Since the plan was irregular, the building could not be understood conceptually at a glance, and the torso and one wing always blocked the view of the second wing: The visual impact of the building on the site was reduced because the whole building mass could not be seen from one position.

The shape responded to IBM's organizational needs. In the SOM building, the CEO's office was placed in a power corner of a building that had a landscaped void at its center. Gerstner wanted a less removed position to encourage more direct involvement in the day-to-day, so the architects situated the executive suites on the top of the middle section of a building otherwise devoted to open-office landscapes.

Unfolded at both ends like a Swiss army knife, the basic parti escapes any sense of geometric rigidity. The three nearly equal lengths of the S bend at two elbows, the larger of which forms a two-story entrance lobby beneath the copper-leafed belly of the board room. The second elbow, at the other end of the central torso, houses another open lobby leading to the terrace, cafeteria, and exercise room. The space in these prows is vectorial, the culmination of long corridors that start their running jump deep inside the adjoining arms.

In the entrance lobby, KPF develops the drama with a polished marble floor that doubles the room's height, like a reflecting pond. The angular plan and parallelogram-shaped floor lines reinforce the arrowlike forces shooting out into the view. (Beyond KPF's core and shell, the handsome office interiors were designed by Swanke Hayden Connell under the direction of Partner Richard Carlson).

Responding to the sloping ridges, the language of the KPF building is dynamic, and structure is visually de-emphasized. The roof line, angled in two directions, always rises or falls with the slopes, and the architects take full advantage of the necessary pitches to stretch the line of the roofs to establish esthetic tension. Stainless steel sheeting wraps down the sides, merging into stainless steel panels cladding walls that lean out a slight $1\frac{1}{2}$ degrees. Steel walls interlock in stepped composition with long expanses of reflective glass striated by long aluminum fins that accelerate the facades, with a horizontal continuity that echoes KPF's landmark building, 333 Wacker Drive in Chicago. Polished granite completes the curtain wall.

The handsome glass-and-steel-and-stone object sits on an ashlar plinth that acts as a datum. The podium—a shock absorber of the site's contours—is layered with strata of differing stones: Fieldstone from the site occupies the lowest level, followed by a riprap wall, and finally fired and polished granite (some laid with the irregularity of ancient Incan walls).

Pedersen uses other devices to achieve a geometric drift gentle on the site. One long tapering terrace wall forces perspective, creating a sense of spatial relativity. On the executive floor, he again forces perspective by creating long corridor walls that converge as the inclined ceiling rises. Pedersen also orchestrates materials to create architectural uncertainty. The stainless steel paneling is blasted with glass beads, resulting in surfaces with a sense of indeterminate depth: The skin reflects the environment in a hazy way, picking up forest, sunshine, and sky. In the main lobby, hypnotic etched glass and mirrors express the same spatial ambiguity.

Although the materials may be richly varied, they are differentiated within a limited palette that minimizes the difference of the architectural parts and shapes. The building represents a departure from KPF buildings, which are characterized by abrupt juxtapositions of formally and materially differentiated pieces layered in collages. The IBM building has many parts, but they flow and break from each other organically, coming to a head at the elbows where they erupt, as though the result of some interior volcanism. Like the site, the building has a geology, but it is crystalline.

The design is a paradigm removed from the SOM building that dominated the site, and cornered nature inside in the form of Noguchi's controlled landscape. The expressed bays and structures of the SOM building advance the rationalist position that man's mind controls nature, while the KPF

Aluminum mullions (facing page) give glazed curtain wall a strong horizontality within facade of polished green granite and stainless steel panels sandblasted with glass beads. Main entrance court (right) is located at bend between main body of building and east wing. Tall aperture marks point of entrance within metal-paneled wall that envelops entrance.

East wing terminates in a staggered, asymmetrical profile of leaning walls (left). Main volume (at left) encloses fire stair that doubles as circulation spine.

Copper-leafed belly of boardroom floats above lobby, where green-black polished Nordic granite gives depth to complex space. Wall of rock-faced quartzite stands behind onyx, granite, and bronze reception desk.

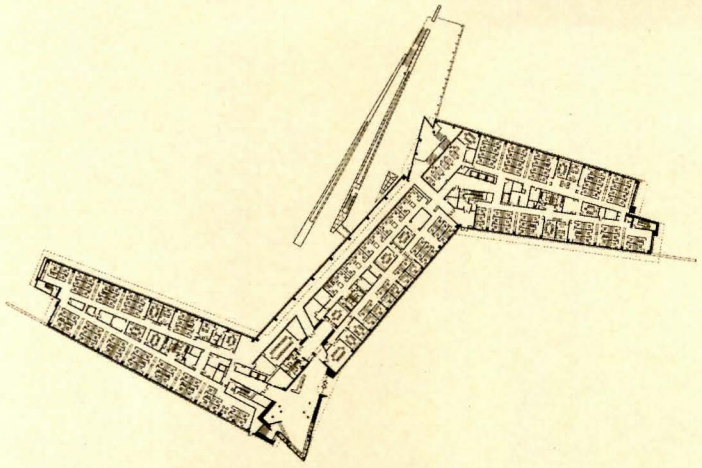
IBM CORPORATE HEADQUARTERS
ARMONK, NEW YORK
CLIENT: IBM **ARCHITECT:** Kohn Pedersen Fox Associates, New York City–William Pedersen (design principal), Gregory Clement (managing principal), Douglas Hocking, Jerri Smith (design team leaders), Christopher Keeny (project manager), Simona Budeiri, Gregory Waugh (coordination leaders), Christine Awad, Vladimir Balla, Darlington Brown, Christine Bruckner, Elina Cardet, Winston Anthony Edwards, Armando Gutierrez, Rena Gyftopoulos, Markus Hahn, Charles Ippolito, David Kaplan, Ming Leung, John Locke, Harutaka Oribe, Yin Teh, Trent Tesch, Suzan Wines (project team) **INTERIOR ARCHITECT:** Swanke Hayden Connell, New York City– Richard A. Carlson (principal-in-charge), Richard S. Hayden (managing principal), Cynthia Kracauer (project manager), Robert Ma (senior interior designer), Douglas Coombs (technical coordinator), Don Kiel, Cheryl Griswold, Enrique Von Rohr (graphics), Damiano Geraci, Richard Holod, Susan Lee, Zoran Nikolic, Mehmet Sargin, Javier Von der Pahlen (project team) **LANDSCAPE ARCHITECT:** Rolland/Towers **ENGINEERS:** The Cantor Seinuk Group (structural); Jaros Baum & Bolles (mechanical, electrical); Ronald A. Freeman Associates (civil) **CONSULTANTS:** Jerry Kugler Associates (lighting); Ronald A. Freeman Associates (environmental); Gordon H. Smith Corporation (exterior wall and skylight) **GENERAL CONTRACTORS:** The Whiting-Turner Contracting Company (core and shell); StructureTone (interiors) **COST:** Withheld at owner's request **PHOTOGRAPHER:** Peter Aaron/Esto

building suggests that man must accommodate his own needs within a natural context he should respect. Though the high-tech sharpness of the KPF building contrasts with the site, it still receives the landscape through the reflective glass and light-sensitive metals, and the gradient of stones. It roots in the earth and fades toward the sky. The bladed forms may be sharp but the relationship with the landscape is serene.

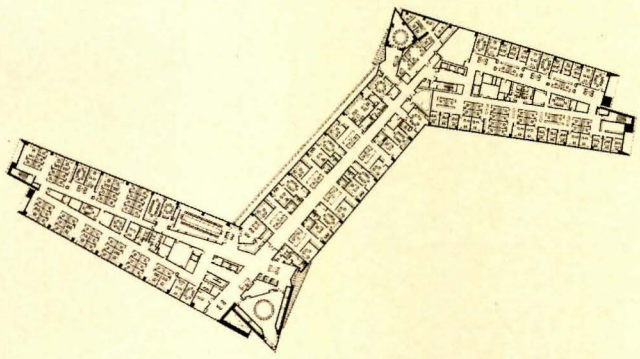
Unlike IBM's 1964 headquarters, KPF's building does not make an exhibition of its order and structure. Only discrete data plugs in the walls suggest the complex electronic circuitry that makes the building thrum. This is not a building of the machine age, but of the electronic age.

In one significant sense, the building is also a paradigm removed from KPF's previous work—even the Carwill House in Vermont. Pavilions anchor the house, and at IBM, Pedersen simply pulled the anchors. Liberating the building sets it into a dynamic flow.

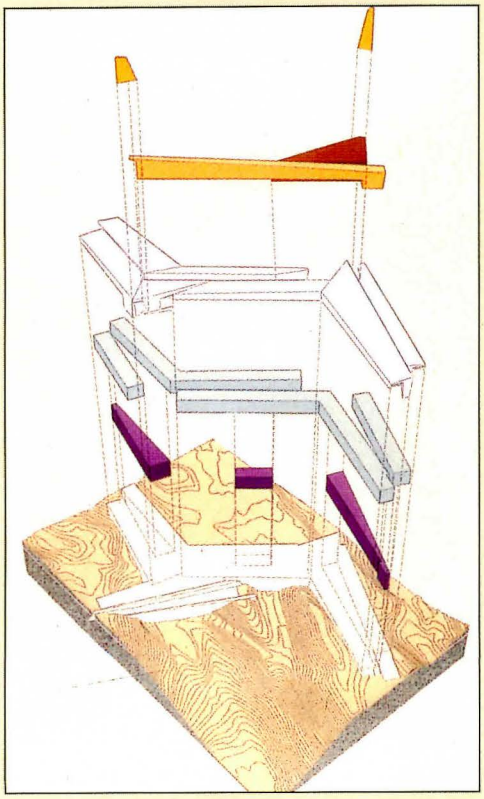
Unlike the streamlined buildings of the automobile age, with their connotation of speed, the visual dynamism of this building implies change. The elbows are the confluence of different geometries that never merge in a single form, but stay independent and multiple. KPF's headquarters does not have the clarity of the SOM building, understood at a glance, but the mystery of a wood that unfolds as it is experienced on a promenade. The ambiguous materiality that shifts with the weather affirms the elusive spirit of the geometry. Predicated on the notion and experience of change, the design embodies the corporate phenomenon that precipitates IBM's downsizing. The corporation's headquarters now acknowledges that the new constant of the new world order is metamorphosis, and rather than resist it, the design makes change into a cornerstone.



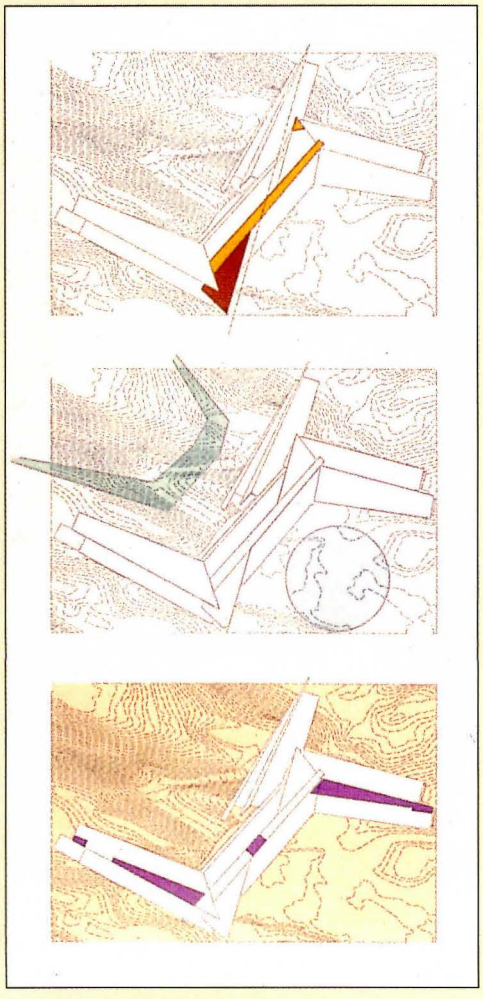
Ground-floor plan



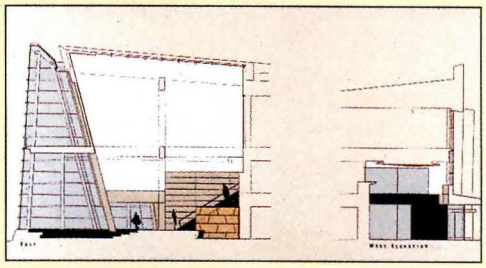
Top-floor plan



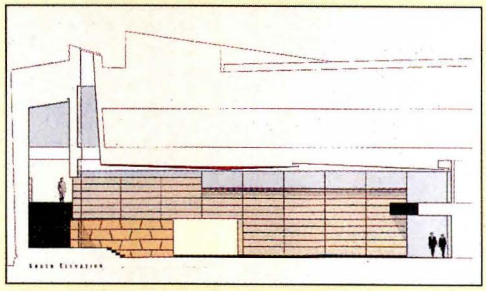
Exploded axonometric



Programmatic diagrams



North-south section



East-west section

Plans focus on wedge-shaped service cores with elevators, stairs, and toilets flanked by open-office workstations. Building is layered from ground up (axonometric) with service cores, workstations, roof, and skylights.

The United States Courthouse in Portland, Oregon, streamlines the judicial process, but it doesn't clearly convey its civic purpose.

By Aaron Betsky

SEARCH FOR JUSTICE

The United States government is building a flourish of new courthouses nationwide, confronting many of the nation's top architects with the increasingly difficult challenge of making places conducive to justice. Demands for increased security, control of prisoners and crowds, and the whims of sometimes imperious judges top the docket. Satisfying these many requirements is the job of the U.S. General Services Administration (GSA), a government agency that is currently engaged in a campaign to erect 155 courthouses coast to coast over the next decade.

The GSA is also trying to elevate the design of courthouses and other federal buildings through its Design Excellence Program (*Architecture*, January 1996, pages 60-63), which invites prominent architects and critics to join judges and agency heads on selection panels. In recent years, the GSA has hired the likes of Richard Meier, Arquitectonica, and Hardy Holzman Pfeiffer Associates to design selected projects.

But political expedience and artistic endeavor inevitably collide and undermine the process, as is evident in the otherwise strong design of the U.S. Courthouse in Portland, Oregon, a $97 million high-rise for federal district judges and magistrates that now lords over that city's government district. Well-composed and efficiently laid out, its design was born from a desire to give a sense of dignity and clarity to justice while impressing viewers with the seriousness of this pursuit. It was organized and detailed with the utmost care by Kohn Pedersen Fox Associates (KPF) of New York and Portland's BOORA Architects, who were actually selected by a GSA panel before the institution of the Design Excellence Program. Yet for all this effort, the building wears the cloak of justice with some unease.

The courthouse's main problem is that it is too large for its site. At more than 340 feet high, it is well over the intended height limit of 300 feet envisioned by Portland's Central City Plan. With a bulk of 543,000 square feet, the building has a floor-to-area ratio of 13:1, as opposed to the 9:1 called for on its relatively small, but prominent site next to Zimmer Gunsul Frasca Partnership's Justice Center and opposite

West facade of federal courthouse in Portland reveals corner elevator and stair towers with steel crown (left), low-e glass-sheathed courtroom lobbies (center), and low-slung limestone-clad block housing court's administrative offices.

Courthouse is newest addition to Portland's government district, which includes commercial office towers (left) and ZGF's pyramid-topped KOIN Center (right).

Roof terrace, used for court-related functions, is shielded by tensioned aluminum-clad canopy and offers views of Mount Hood.

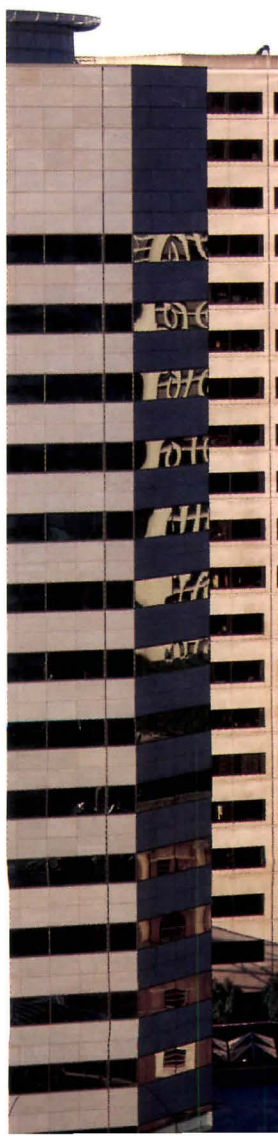
Michael Graves's more famous Portland Building. The federal government was able to realize such a large building because they are exempt from local ordinances and zoning regulations.

To both the client's and the architects' credit, they worked hard to mitigate the size. "When we made the first massing model," recalls BOORA Partner John Meadows, "It looked like the Mike Tyson of the government district. So we created an asymmetrical massing that responds to its setting." The courtrooms, judges' chambers, and deliberation rooms are stacked in a 17-story tower with a floor plate of 20,000 square feet, while an eight-story "sidecar" houses the court's administrative functions, such as the clerk of the court, magistrates' offices, and a library. "We tried to respond to the setting. It is a very cohesive landscape, even if the architectural context of Portland is a mixed bag," says KPF Design Principal William Pedersen.

Adds GSA Project Manager Duane Denny: "We tried to work with the city to get this to work; we wanted a place people *could* be proud of that would show contemporary design in its best light." Denny acknowledges, though, that the building "feels too large" for its site, and laments cost-cutting measures that eliminated elements such as a corner staircase that he felt would have "lightened the building."

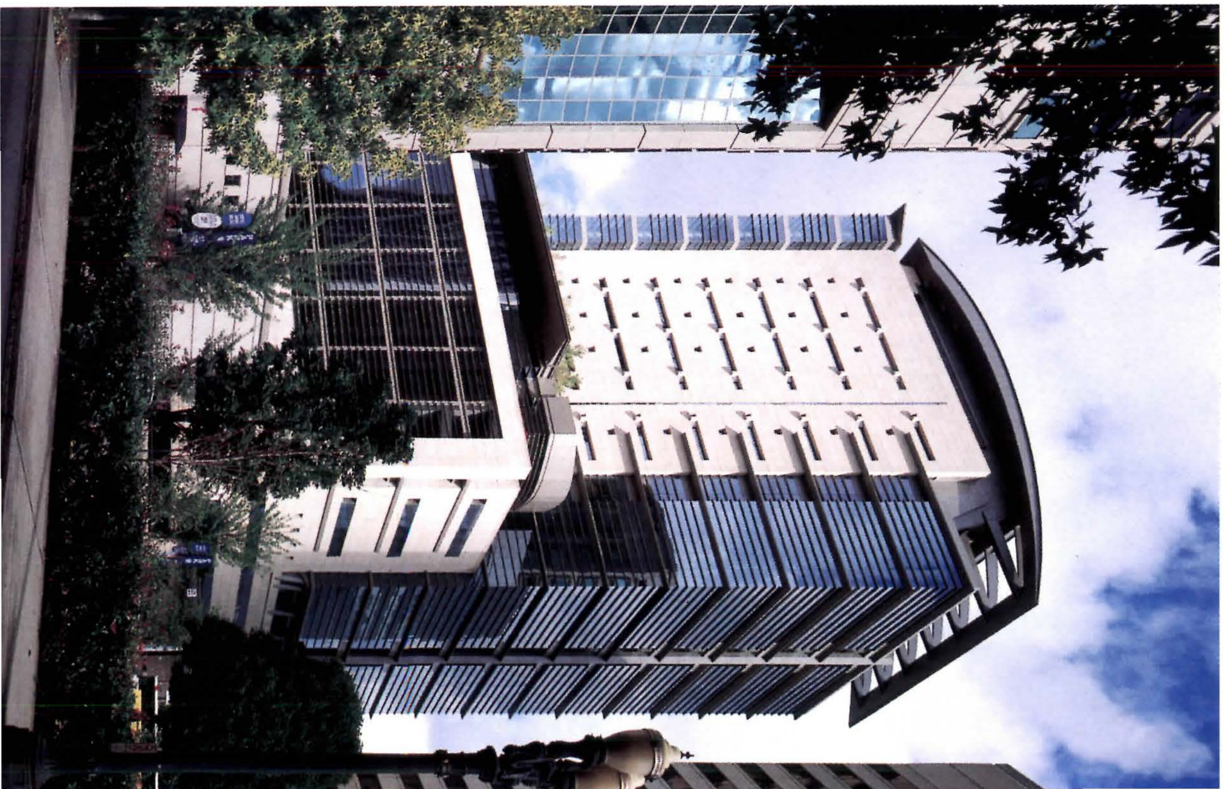
The core of the central tower forms a moment frame that encloses the courtrooms and safeguards them in this seismically active area. The block is clad in Indiana limestone and sports small windows that make it look like a fortress. These openings light corridors leading back to the judges' chambers and bring light to the courtrooms through funnels that widen from the exterior to 10-foot-wide clerestories inside. "We wanted light, but no outside influence," explains Judge Malcolm F. Marsh, who acted as the client for the whole District Court.

The judges' chambers are contained in an office block-like, glass-and-steel tower looking past the Willamette River to Mount Hood, while the public waits in glazed lobbies on the other side of the courts. From there, they overlook the six-block-long park that centers Portland's government district



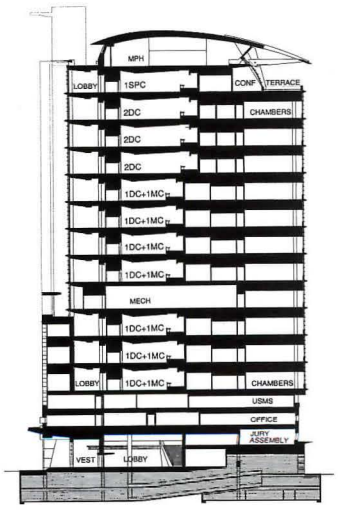
Courthouse fronts Lownsdale Square and Michael Graves's Portland Building. Slitted windows on north facade daylight corridors. Glazed eastern end of building houses judges' chambers.

Eighth floor features public terrace with sculptures by Tom Otterness, and is accessible from courtroom lobbies.



View from south shows relationship between glazed tower and its limestone-clad "sidecar," which houses court offices.

Steel canopy tops ground level of west facade to echo scale of adjacent Justice Center by ZGF. Two-story loggia and trio of ceremonial flagpoles demarcate court's main entrance.



East-west section

through a floor-to-ceiling glass wall, and are themselves on view. "I wanted to give litigants a chance to have some room while they were waiting," explains Judge Marsh of these ample spaces.

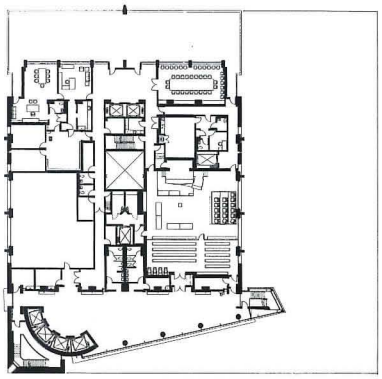
The mass of the tower unfortunately exudes a sense of enigma, rather than monumentality. The curved metal canopy that surmounts the building in place of a more traditional dome or spire further confuses the identity of building, while "pushing it down visually," according to Denny. This termination is especially disappointing, given the client's rejection of a Classical monolith that intimidates people. "I wanted real dignity, a building that would speak of the seriousness of the work here, that would calm people," explains Marsh.

The architects succeeded in answering this call on the level of details and interior arrangement, resulting in a building that "makes me more proud than anything I've ever worked on," according to Denny. "We have long been interested in setting things in dialogue with each other, in reconciling opposites," adds Pedersen. "Here, we represented how the judicial process also reconciles opposing points of view." They did so by "stitching together," as Meadows put it, the various elements of the facade into active compositions that clarify structural forces while composing themselves into almost Classical tripartite orders. Everywhere one looks, columns, lintels, and walls do not so much stand in relation to each other as they interpenetrate and support each other.

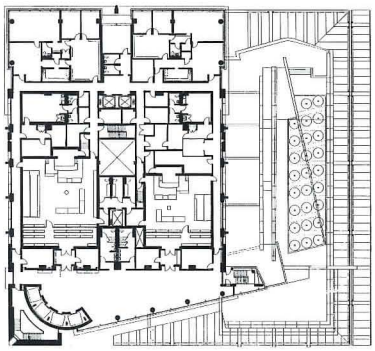
Inside, the main lobby conveys a sense of monumentality without overwhelming those who enter through acres of marble in abstract compositions of walls, floors, and stairs. "Abstraction was also cheaper," notes KPF Project Architect Jerri Smith of a building whose value engineering brought it in 10 percent below budget.

The pairing of two courtrooms per floor creates an efficient symmetry in plan; a spine of vertical circulation elements serve the courts on either side. Within those courtrooms, the architects centered the main "well," where judge, jury, counsel, and accused face each other, and the judge's bench on the front door, and then

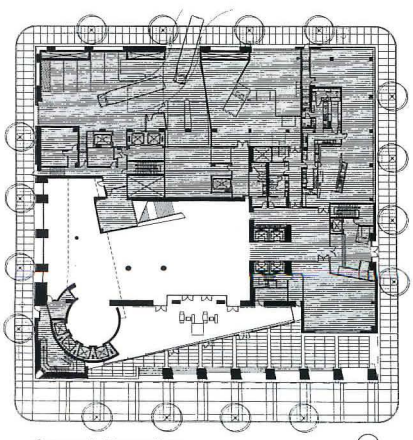
Curving ceiling soffits help direct court traffic. KPF-designed cherry benches and leather doors modernize familiar courthouse material palette.



Sixteenth-floor plan



Ninth-floor plan



Ground-floor plan

let both the audience area and the jury box become "side rooms where the world passes in front of you," as Meadows puts it. A sense of dignity and hierarchy is conveyed in these rooms, which also accommodate the plethora of new technology, such as video projection equipment, that now is an integral part of the court's operations.

Indeed, there is a sense of clarity and efficiency about this whole building. From the tripartite division of the court mass into central stone volumes flanked by glass with two side elements, housing the public lobbies on one side and the judges' chambers on the other, to the symmetry of the courts, there is an appropriateness and logic to what each piece is doing. Even the adjustments to the reality of site and use, such as the "sidecar" and the eccentric jury box, are carefully stitched back into the fabric of the building. Nothing seems out of place, and one can understand each part within the whole.

Yet the overall meaning and form of the building remains unclear. One never quite understands this building as a courthouse because it has too few historical or visceral cues to trigger memories of or associations with the exercise of justice. A $1 million art program (double the minimum federal requirements) helps enliven the surfaces with sayings about the law, fills the public spaces with soothing waterfalls by Los Angeles artist Eric Orr, and enlivens the eighth-floor roof terrace with whimsical bronze animals acting out a courtroom drama devised by artist Tom Otterness. But these elements are only add-ons to architecture that neither looms nor soars, and sits with little splendor on its site.

The Portland courthouse will no doubt process its cases with great efficiency, for the architects have served their clients' needs with much care, and it will create a sense of calm, order, and logic around each judicial action. That in itself is an improvement over the cramped and confused conditions that prevail in many modern courthouses, as well as over what Denny calls "the bad old days when we made horrible buildings and did rotten things to historic structures." But this building still leaves questions over the image of justice in our cities unanswered.

Stair in main lobby leads to jury selection area on second floor. Marble walls, granite columns, and soaring ceilings create dramatic first impression. Austere cherry and maple paneling establish clean, modern lines in typical district courtroom. Custom-designed lighting armature continues perceived division of court and audience spaces. Rectangular light scoops in walls taper into square windows at perimeter.

UNITED STATES COURTHOUSE
PORTLAND, OREGON

CLIENT: U.S. General Services Administration **DESIGN ARCHITECT:** Kohn Pedersen Fox Associates, New York City—William Pedersen (design principal), Robert Cioppa (design administrator), Jerri Smith (design team leader), Gabrielle Blackman, Douglas Hocking (design team), Sudhir Jambhekar (project manager), Juan Alayo, Isabelle Autones, Christine Awad, Vladimir Balla, Nathan Clark Corser, Vivian Kuan, Trent Tesch (project team) **ARCHITECT:** BOORA Architects, Portland, Oregon—John Meadows (principal-in-charge), Libby Barber (project coordinator), Kirk Conover, Ron Huld (project architects), Patti Buser, Larry Chew, Eric Cugnart, Eve Fagenstrom, Nina Gonzales, Mark Haidle, Randall Heeb, Joan Jasper, Leslie Kuhl, Jo Landefeld, Bruce Markosian, Sallie Martinson, Meg McCance, Beverly Moss, Kim Oey, Sharilyn Rigdon, Alan Scott, Liz Summers, Cindy Ticknor (project team) **LANDSCAPE ARCHITECT:** Murase Associates **ENGINEERS:** KPFF Engineering (structural); PAE Consulting Engineers (mechanical, electrical) **CONSULTANT:** Mayer/Reed (graphics); CRSS Constructors (construction management) **GENERAL CONTRACTOR:** Hoffman Construction Company **COST:** $97.9 million **PHOTOGRAPHER:** Timothy Hursley

IN PROGRESS

Kohn Pedersen Fox diversifies its current portfolio with university buildings, while exporting its high-rise expertise to Asia.

By Michael Maynard

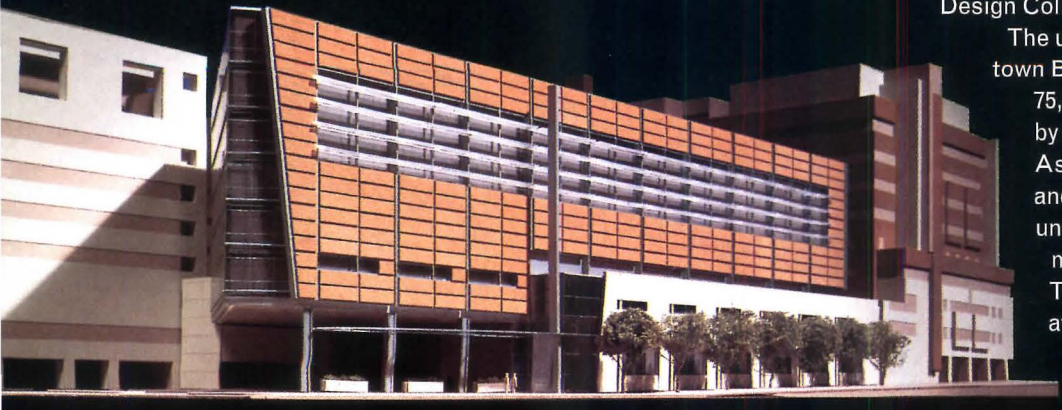
Campus Buildings

MEDICAL SYSTEM UNIVERSITY OF MARYLAND BALTIMORE, MARYLAND

Kohn Pedersen Fox does not have a long track record in healthcare architecture. However, the firm is gaining experience by collaborating on the University of Maryland's medical facilities with executive and medical planning architect Perkins & Will and architect of record Design Collective of Baltimore.

The university is expanding its hospital in downtown Baltimore with an adjoining seven-story, 75,000-square-foot critical-care facility developed by Design Principal William Pedersen and Senior Associate Principal Robert Goodwin. The brick- and stone-clad building will contain a surgical unit, emergency department, imaging department, and a center for women and children. These functions will be linked by a central atrium leading to the existing medical center.

The project is currently in design development and is scheduled to open in 2000.

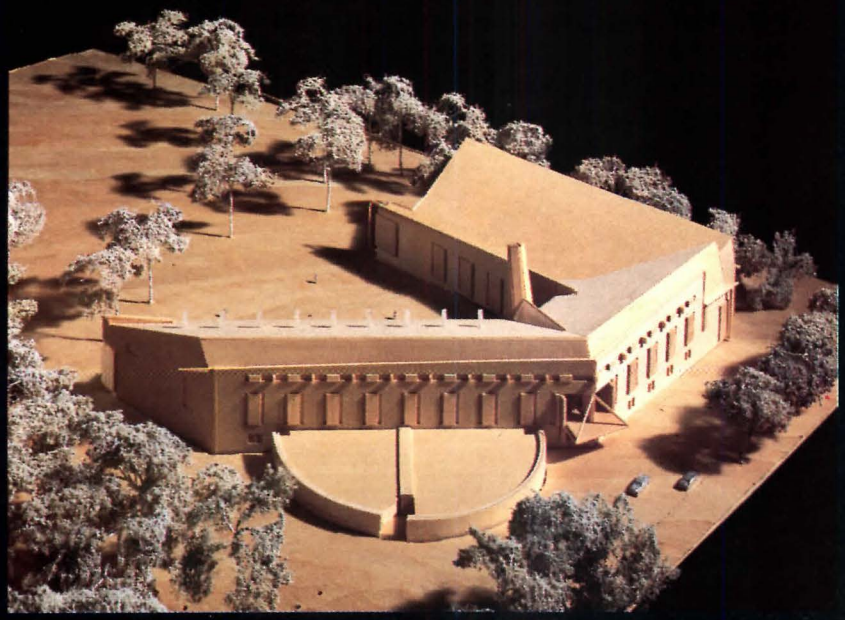


ACADEMIC CENTER
BARUCH COLLEGE
NEW YORK CITY

Occupying an entire city block on Manhattan's Lower East Side, KPF's new academic center for the City University of New York will house Baruch College's business and liberal arts schools, as well as its executive education program. In all, 40 percent of the college's classroom space will be located in KPF's new $168 million building.

The 712,000-square-foot facility's design responds to New York City's zoning rules, which are meant to ensure that sunlight reaches the street. Thus, the building's profile is curved back at the upper levels of the 16-story building. Lower levels are clad in stone and brick, supporting the rounded, metal-shingled upper portion.

Design Principal William Pedersen and Senior Associate Principal Gabrielle Blackman created a great, central interior space that serves as a vertical internal campus quadrangle. Two wings of classrooms and offices branch from the atrium. The building is scheduled to be completed in 2000.



LAW SCHOOL
UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON

The new law school at the University of Washington moves the school back to the Seattle campus from its present site one mile away. For KPF, the challenge was designing a new building on a campus dominated by Neo-Gothic architecture. Design Principal William Pedersen and Senior Associate Principal Jerri Smith, working with architect of record Mahlum & Nordfors McKinley Gordon, created a five-story building arranged around a courtyard that gestures toward the main campus.

Rather than compete with the university's architecture, the building makes abstract references to the Gothic theme with vertical window openings and angled gables. More than half of the 200,000-square-foot brick building will house classrooms, moot courtrooms, faculty offices, seminar rooms, and meeting areas. The rest will contain the law library.

The first level is located 10 feet below grade and is entered from the south-facing courtyard; the main entrance is positioned on the building's northern side. Instructional spaces, including two auditoriums on the second floor, occupy the second and third floors, while offices are located on the fourth and fifth floors. Schematics have been completed, but a funding delay has put the next phase of the project on hold.

IN PROGRESS

SAM YANG MIXED-USE BUILDING
SEOUL, KOREA

Three slender towers, each with slightly different massing, distinguish the office and residential functions of this complex. The tripartite composition, designed by Design Principals William Pedersen and Peter Schubert, was also driven by dimensional requirements and strict open-space and building setback criteria.

The $165 million complex on a compact site differs from other area buildings in that the three structures provide a greater level of intimacy and detail. A sweeping canopy at the base of the south tower marks the entrances to the office and residential lobbies, and a stone staircase allows movement from the street to the lower-level shops.

The facades primarily consist of glass and metal. Stone is specified for the east and west facades, and the plaza. The curtain wall design suggests a screenlike quality of enclosure and spatial definition characteristic of traditional Asian architecture. The project should be completed this year.

Buildings in Korea

DACOM HEADQUARTERS
SEOUL, KOREA

KPF's work in Korea is part of a building boom in one of Asia's most rapidly growing and solidly performing economies. The Dacom Building's prismatic shape is as much a response to the zoning requirements of Seoul as it is to the building site along the northern gateway into the South Korean capital. Laws mandating sky exposure guided the building's position and form, while open-space regulations dictated the footprint on the site. Clad in lightly reflective glass with a greenish tint, the 600,000-square-foot corporate headquarters is designed to express the telecommunications company's high-tech image.

The main lobby is raised to the second level to provide better views and security. The floors housing the company's telecommunications equipment are located in the lower six levels of the tower just above the main lobby, with the executive and cafeteria floors located at the top of the tower. Design Principal William Pedersen and Senior Associate Principal John Koga are designing the building in association with architect of record Chan Jo Architects of Seoul. Design drawings have been recently completed and the project is awaiting zoning approval. KPF expects to complete the tower by the end of 1999.

DAEWOO TOWER
PUSAN, KOREA

The sheer size and mass of this 88-story multiuse tower along a waterfront site inspired a design of abstract, monolithic simplicity. The tower's prominent location and asymmetrical shape are intended to symbolically connect the bodies of water to its east and west.

The project was led by Design Principal William Pedersen and Senior Associate Principal Robert Whitlock. Pewter-colored glass with painted aluminum mullions and stainless steel canopies enhance the tower's statuesque form. A concert hall, shops, and museum are clustered at the tower's base to create a small, urban village. The concept of more human-scale development at the street level is intended as a complement to the soaring majesty of the structures.

The lower third of the building provides flexible office space, while the smaller middle and upper levels house apartments and hotel rooms, massed around a north-facing atrium. With the structure's size and the diverse programs within it, the planning and segregation of entrances and lobbies provide a free flow of traffic. The tower culminates in an observation level that provides panoramic views of the surroundings. The expected completion date is 2002.

SEOCHO FASHION CENTER
SEOUL, KOREA

This 40-story skyscraper is being hailed as a catalyst for a new district that will identify Seoul as Asia's center of fashion. The client, Samsung Group, envisioned the building as bringing together the various components of the fashion world—creative, commercial, educational, and promotional—and transforming the traditional relationships among them. Design Principal William Louie and Senior Associate Principal Robert Goodwin interpret this program as a community of forms that complement, contrast, overlap, and interlock to express the business, retail, and entertainment functions of the building.

The structure's facade consists of glass and stainless steel, detailed with folded layers and edges designed to look as if they were stitched by needle and thread. At the ground level, a public plaza spills into a multistory glass atrium, offering dynamic interaction between interior and exterior. An eight-story "leg" that supports the tower rests in the plaza's center. The leg is both symbolic (representing the world of fashion) and structural, transferring loads from perimeter columns and allowing the atrium to be a column-free space. The building should be completed by 2000.

IN PROGRESS

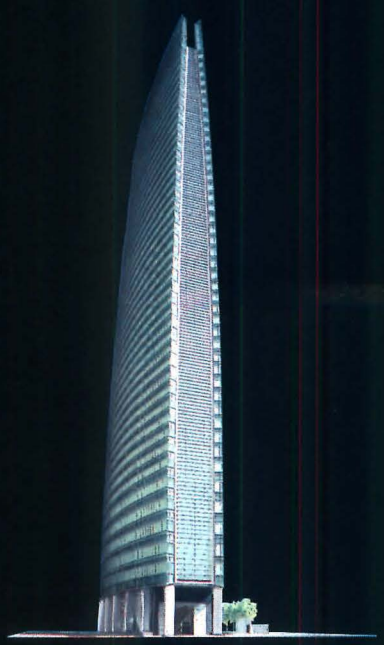
ESPLANADE MALL SINGAPORE

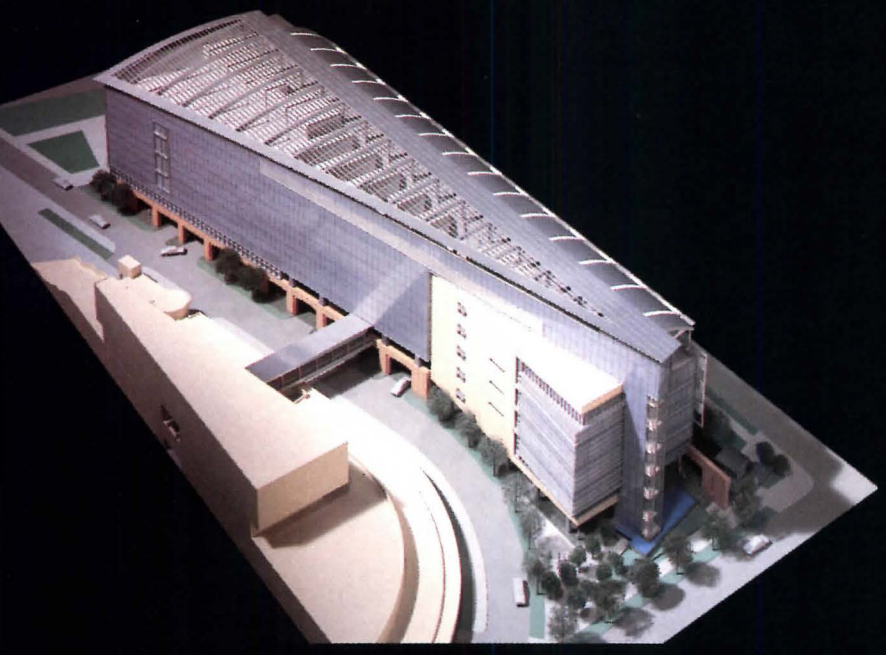
Designing an office building and underground retail mall for a small site in Singapore's historic Padang district requires a balancing of styles. The design mustn't overshadow nearby government buildings and a prominent war memorial, yet it should establish a signature presence that befits a high-tech office building. The seven-story Esplanade Mall rests on a two-story stone base and is topped by a vaulted zinc roof, which establishes its contemporary, understated presence.

Unlike KPF's Asian towers, in which streamlined facades mask complex interiors, the Esplanade Mall is pieced together like a puzzle. Designed by Design Principal William Pedersen and Associate Principal Duncan Reid, the 365,000-square-foot structure is distinguished by two wedge-shaped volumes that respond to the contours of the compact site nestled between a roadway and the dense blocks of the Padang. The larger wedge faces west, fronting the Padang, and slips into the smaller, east-facing glazed wedge that connects to a hotel and shopping complex across the street by an enclosed pedestrian bridge.

Because Singapore is situated one degree north of the equator, protection from the sun is paramount. KPF extended metal screens from the roof to shade the west facade, sunk the retail spaces one level below ground, and connected them to the city's underground walkways. The mall establishes a link between Singapore's historic and commercial attractions. The project is expected to be completed by 2000.

Buildings in China





SHANGHAI WORLD FINANCIAL CENTER SHANGHAI, CHINA

The beguiling, simple shape of this 95-story tower responds to the spate of development in the Pudong area of Shanghai, which the Chinese government has designated a massive development zone. With the myriad shapes and sizes of buildings that will emerge from this endeavor, the straightforward design of the $500 million financial center by Design Principal William Pedersen and Senior Associate Principal Joshua Chaiken will be quietly distinctive.

Symbolizing the relationship between earth and sky, the lower 28 meters of the tower's facade are faced in heavily rusticated stone, while the tower's upper floors are sheathed in lightly reflective glass and stainless steel.

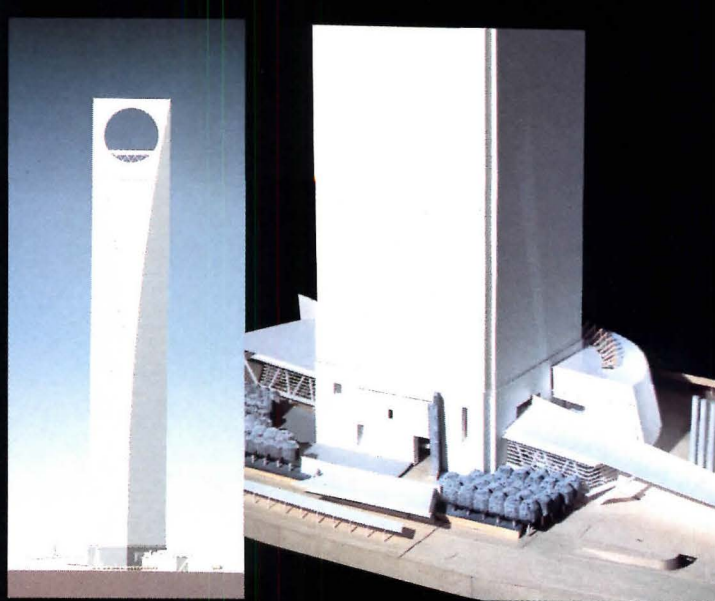
The progression of gradually smaller floor plans generates configurations that will be suitable for office space on the lower floors and hotel suites above. The tower's top aligns with the Oriental Pearl TV Tower, the dominant landmark of Pudong that sits about a half-mile away. A 50-meter hole carved at the tower's apex is intended to relieve wind pressure. The complexities of pedestrian movement on the street are expressed in busier forms at a lower scale to offset the tower's simplicity. The 317,000-square-meter project is expected to be completed in 2001.

and Singapore

T'AICHUNG TOWER II T'AICHUNG, TAIWAN

The 47-story T'aichung Tower II, designed by Principal William Louie and Senior Associate Principal Robert Goodwin, sits atop a monumental site overlooking a landscaped open mall on one side and the city center on the other. To address these dual urban conditions, the finely detailed glass-and-metal curtain wall curves on either end to form an ellipse, providing a sculptural presence to either side. Its two outer walls wrap around the elevator core as a slender silver shaft at the eastern end. The building's core also marks the center of the pedestrian mall.

As with its other multiuse Asian towers, KPF synthesizes disparate programs into unified forms. A hotel occupies the larger floor plates on lower levels, while the upper levels house offices. A double-height ballroom sits directly above the lobby. Now under construction, the 48,900-square-meter project will be completed in 1999.



It had all the potential to be brilliant. But they just didn't quite get it.

Suddenly, compromises had to be made. But not everywhere. The saving grace was the windows. Because there's a kindred soul that shares your passion for

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fine detail. From 7/8" TDL, five hardwood interiors, all the way to the only vinyl window you would ever specify with confidence. Unlike so many others...they get it.

There's more to see in a Weather Shield window™

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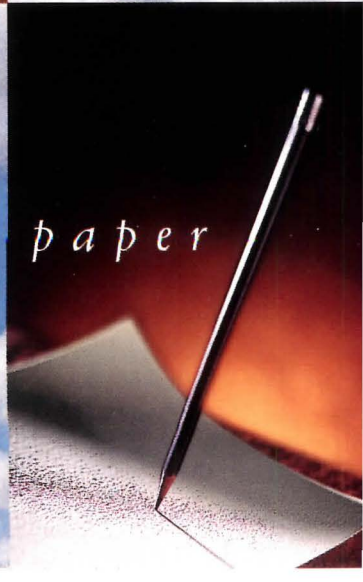
than a blank *sheet of paper*



Technology + Practice

Technology's most significant improvements take time, but are worth the wait. New, noninvasive testing methods, proven in Europe and nascent in America, help architects diagnose historic buildings without risky surgery. Single-ply membrane roofing, which initially flopped in this country 25 years ago, is now widely respected, since manufacturers have improved their durability with thermoplastics. And large, unwieldy computer monitors are slimming down with more compact components, to save desk space and boost image clarity.

Infrared analysis of Eero Saarinen's Gateway Arch was undertaken by St. Louis-based consultant En Tech to determine source of roof leaks into underground museum.

Preservation Technology

Assessing Historic Structures—Without Damage

The same high-tech tools that help soldiers hunt snipers and doctors track tumors allow architects to evaluate old buildings without destroying precious fabric.

By Eric Adams

Electronic sensing equipment has long been a fixture in the military, medical, and science fields. Now, these technologies—radar, infrared, x-ray, sonar, and others—are crossing over into architecture as tools for evaluating historic buildings. In addition to providing more and better data than conventional assessment methods, they allow for virtually damage-free investigations. Termed nondestructive evaluation (NDE), the techniques have been a key part of the architectural preservation practice in Europe for a number of years, and only now are beginning to be embraced by the American preservation community.

Nondestructive evaluation technologies seek out and measure deterioration, voids, cracks, and other anomalies within concrete, wood, and masonry and help determine the structural layouts of historic buildings whose blueprints vanished long ago. "The potential here is tremendous," says William Foulks, an associate with preservation specialists John G. Waite Associates Architects in Albany, New York. "People are always looking for ways of dealing with old building fabric without destroying it, and if we can look at a roof without tearing holes in it, that's a significant savings."

Though some equipment, such as metal detectors and fiber-optic observation devices, are inexpensive enough to be owned and operated by architects, most of the techniques are costly and complex. NDE consultants are vital as operators and interpreters of the data generated by their equipment, most often in the form of computer-generated wavelength charts, "black box" numbers, or color-coded feedback displayed on monitors.

"From a visual standpoint, you might be able to tell there's a problem here or there, but it's tough to tell how severe it is," says Michael Schuller of Boulder, Colorado-based Atkinson-Noland & Associates. "Nondestructive evaluation puts a number to our observations."

Fast scanning

Foulks and his colleagues have benefitted from these precise analyses on numerous projects, most recently the restoration of the Armory and Gymnasium at the University of Wisconsin in Madison. Atkinson-Noland helped them assess the strength and condition of masonry and locate tie courses in the 1894 landmark, which is being renovated into office space. In only a few days, the team conducted a variety of sound transmission, or "pulse velocity," and fiber-optic tests all over the building. Its final report catalogued these tests and provided a detailed analysis of the building's strengths and weaknesses.

NDE specialists, whose reports sometimes offer recommendations about how to handle the problems

Nondestructive Evaluation Techniques

From small fiber-optic devices available for only a few hundred dollars to ultra-high-tech radar scanners that can cost up to $150,000, the nondestructive evaluation technologies being applied to historic preservation vary widely, both in methods and price. Fortunately, architects and owners only have to pay day rates for this equipment, so the tools can be chosen based on the needs of the project. For more information about nondestructive evaluation, contact the following organizations:

American Society for Nondestructive Testing
P.O. Box 28518; 1711 Arlingate Lane
Columbus, Ohio 43228-0518

Association for Preservation Technology
P.O. Box 3511
Williamsburg, Virginia 23187

FIBER OPTICS

WHAT IS IT? A fiber-optic instrument called a borescope allows close inspection of hard-to-reach areas, such as wall cavities.

WHAT CAN IT DO? This easy-to-use device has minimal impact on building fabric. A lens at the tip focuses images at a variety of distances.

WHAT ARE ITS BENEFITS? The borescope is very helpful for checking mortar and steel reinforcement conditions. Video and still cameras can be attached, enabling group viewings on-site or back in the office. Among the lowest-priced nondestructive evaluation tools, the borescope can be purchased for as little as $500.

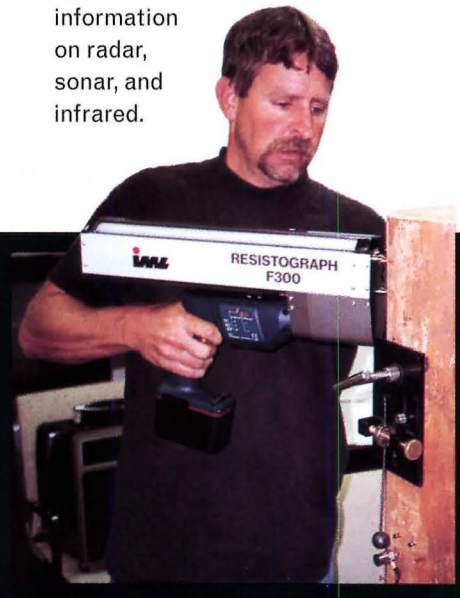
discovered, are generally hired for one to three days, at fees that range from $1,000 to $10,000 or more depending on the scope of the work and the equipment required. Of course, as the equipment rises in price, so do their services.

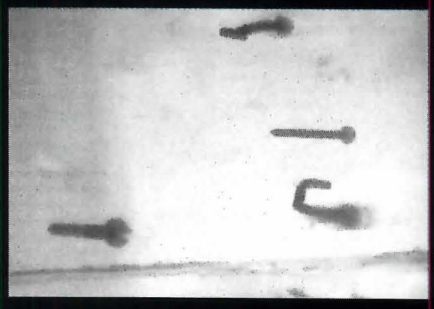
Radar range

High on the price list are infrared thermography and radar ($50,000 to $150,000), both of which are among the most popular—and effective—services available. New York City-based structural engineer Robert Silman was an early pioneer of these two technologies. "We first got into this eight years ago when I applied for a research grant from the Army Corps of Engineers," Silman explains. "The military had come up with a lot of information on radar, sonar, and infrared. They thought it was a great, peaceful use of military technology."

One of Silman's first projects using the technology was the 1993 renovation and rehabilitation of the New York state capitol in Albany, a historic 1911 structure whose original drawings were lost in a fire. Stone, concrete, and brick floor and wall surfaces were scanned with a "subsurface interface" radar to detect wall depths and I-beam, structural reinforcement, and utility locations. Infrared thermography located pipes and flues, which registered at different temperatures than the surrounding structure.

The New York capitol project field-tested much of this equipment, allowing Silman's firm to apply the techniques in earnest during a recent renovation of Princeton University's twin Clio and Whig halls. Working with architect Ford Farewell Mills & Gatsch and British consultant G.B. Geotechnics, Silman's team scanned the halls' 12 cracked marble columns. Radar showed that the cracks were





INFRARED THERMOGRAPHY
WHAT IS IT? An infrared thermograph measures electromagnetic radiation, which changes with temperature.
WHAT CAN IT DO? Detects and maps temperature changes, caused by voids and water penetration, on a building surface. Results are displayed on a color monitor.
WHAT ARE ITS BENEFITS? One of the benefits of infrared thermography is that it can be used from a great distance and can focus on a specific area or an entire structure. It is expensive—ranging from $75,000 to $150,000—and requires professional operation and interpretation.

RESISTANCE DRILLING
WHAT IS IT? Used to assess timber strength, the drill bores a long, thin needle into wood beams, measuring the resistance it encounters and graphing the changes on a strip of paper.
WHAT CAN IT DO? Resistance drilling helps detect decay within timber beams. Lower-density areas signal decay or voids. The needle actually repacks the wood fibers displaced by the drilling, so no repair work is necessary.
WHAT ARE ITS BENEFITS? This device is ideal for any project with numerous timber beams. Interpretation of the data is straightforward, but assessing the wood's strength and condition requires a consultant.

X-RAY
WHAT IS IT? Digital or film radioscopy allows detailed observation of materials.
WHAT CAN IT DO? This process helps locate and determine the precise condition of different building materials and components.
WHAT ARE ITS BENEFITS? Film radioscopy provides the greatest detail, but at significant cost ($10,000 per day) and inconvenience—scanned areas must be roped off for safety reasons. Digital radioscopy, on the other hand, allows for real-time observation with practically no health risks, but at lower resolution.

for the most part shallow and that the 22-foot-high columns were structurally sound. "You can't get solid marble this long anymore," maintains architect Michael Mills. "This technique not only saved the historic marble, but also saved the school more than $750,000 in replacement costs."

Temperature detection

Infrared thermography has the same cost-saving potential as radar. St. Louis-based consultant EnTech uses it, in addition to radar, to save money and effort in large projects. Thermographic devices take still or video images using special lenses that register temperature changes on an object, so areas of heat loss are easy to isolate in color-coded images.

EnTech founder Gary Weil first applied infrared in the early 1980s to help locate leaks in the roof of the Gateway Arch museum, which is buried beneath Eero Saarinen's 630-foot-high monument. "We had to look at about 15 acres of roof structure," Weil explains, "so we went to the top of the arch in the middle of the night and I shot pictures by sticking my arm out of the window and pointing the camera down."

A more recent project was to analyze the roof of the Seattle Kingdome with infrared thermography. Numerous ceiling tiles had collapsed during a 1994 baseball game, so a thorough check of the whole 360,000-square-foot roof was in order. Weil completed the evaluation without leaving a 10-foot circle at second base .

Currently, EnTech is assisting the National Park Service in the restoration of the Saratoga Monument in Saratoga, New York, and the restoration of Castle Clinton in New York City's Battery Park. David Bitterman, an architect with the Park Service's Northeast Cultural Resource Center in Lowell, Massachusetts, says that NDE methods have become an integral part of the agency's preservation strategy. "These resources are of such importance that you can't justify doing intrusive work," Bitterman maintains.

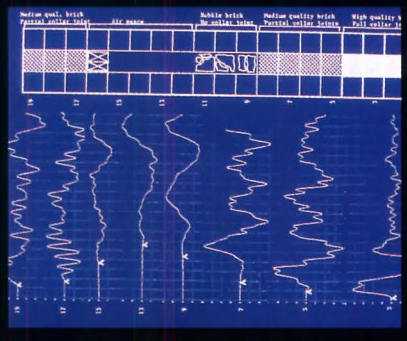
Assessment of wood structures often relies on evaluation techniques developed specifically for the material. Ronald Anthony, president of Engineering Data Management (EDM) in Fort Collins, Colorado, employs a device called the Pole-Test, which his company developed to quickly assess utility pole strength. It relies on a variation of speed-of-sound tests to detect flaws and assess wood's bending strength. "We have been taking the work we began with these poles and are applying it to other areas, and historic structures are at the front," Anthony explains.

Drills and x-rays

Anthony also relies on a German-made instrument called the Resistograph that drills a long needle into a wooden pole or beam and measures the resistance it encounters, and plots it on a strip of paper. The printout shows the density of the wood and thus provides precise locations and sizes of decay or void. "Everyone knows that when you're inspecting timber and you find a void, you have a problem," Anthony points out. "This drill allows you to track early decay and take remedial action.

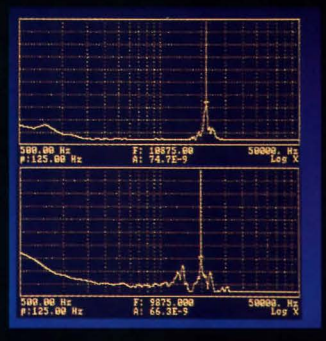
REBOUND HAMMER

WHAT IS IT? A spring-actuated tool that measures the rebound of a metal mass off a given concrete or masonry surface to test its relative hardness.
WHAT CAN IT DO? The rebound distance, which is displayed on a gauge, is greater for hard, dense materials than for soft materials and thus indicates flaws and deterioration.
WHAT ARE ITS BENEFITS? The rebound hammer is best applied as a preliminary assessment device. The hammer is very easy to use *and its results easy to interpret*, but it starts at about $1,000 so will probably only be owned by nondestructive evaluation specialists.



PULSE VELOCITY

WHAT IS IT? Pulse-velocity is a signal, measured in microseconds, sent from a transmitter through a building material to a receiver. The signal's speed changes as it encounters different materials or changes within a given material.
WHAT CAN IT DO? Among the most popular NDE tools, pulse-velocity devices can help identify and measure interior flaws. Generally, if the signal gets through quickly, the material is good. If it takes longer, there are anomalies.
WHAT ARE ITS BENEFITS? Pulse-velocity techniques allow for large areas of masonry to be assessed quickly and economically. Equipment ranges from $4,000 to $30,000.



IMPACT ECHO

WHAT *IS IT? A different* type of pulse–velocity measurement, impact echo uses a small hammer or ball bearing to measure internal reverberations of an impact on the surface.
WHAT CAN IT DO? Impact echo tracks the velocity of stress waves within a material to detect and delineate internal discontinuities in materials, usually concrete or masonry. The resulting wave patterns also help identify the discontinuity's nature and orientation.
WHAT ARE ITS BENEFITS? Impact echo permits wall inspections when access to only one surface is available. *A qualified operator* is needed to use the equipment and interpret the data. Prices range from $15,000 to $30,000.

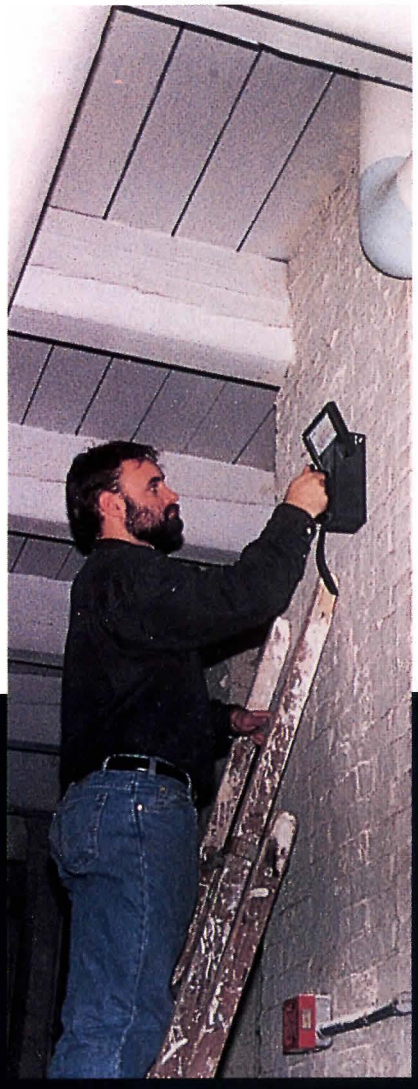
New to EDM's repertoire is the real-time digital radioscopy (x-ray) machine. Still in its test phase with the company, digital radioscopy enables architects and engineers to quickly locate joints and fasteners and, more importantly, determine their condition. Though less detailed than film radioscopy, which is occasionally applied in historic preservation, real-time digital x-rays have the advantage of safety. These devices are no more dangerous than dental x-rays. The drawback is its price. The x-ray machines begin at about $32,000 per unit, so even hiring one is expensive and, in most cases so far, cost-prohibitive for architects. "But if there is a structure that people are really concerned about, it might be worth it to have us come in for a day," Anthony concludes.

Few standards

Nondestructive evaluation is still a very young field, and architects should be cautious about how results are obtained and interpreted. Because these tests are still new, very few have accepted standards for usage and calibration, so different consultants might get different results from the same test.

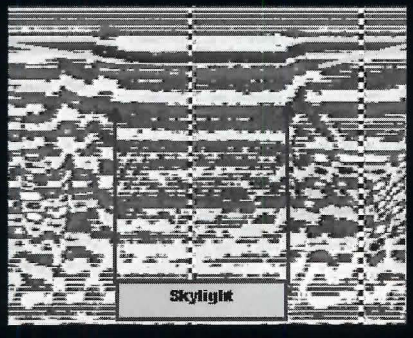
Architects also need to know precisely what they are looking for so that the consultants can develop their strategies and help the architects decide which equipment is necessary for each project. Time schedules are also important. "It's very important that goals and objectives are stated very clearly right off the bat," Schuller says. "We can concentrate on little details for weeks if you want us to, but to make the project cost-effective and efficient, a plan needs to be in place."

Despite the expense of the technology and current scarcity of experienced consultants, the field of nondestructive evaluation is growing rapidly, with the number of firms offering services to the preservation community increasing yearly. Like other technology-based fields, nondestructive evaluation methods are becoming more effective, and often less expensive, as they improve. In a few years, handheld radar and infrared devices may be as common in architecture offices as computer-aided design workstations.



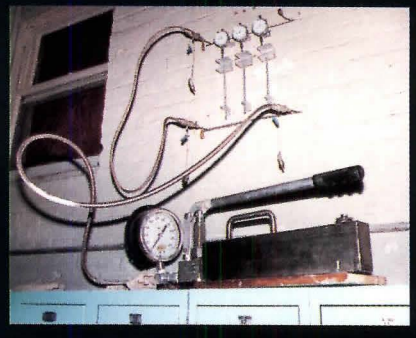
ELECTROMAGNETIC DETECTION

WHAT IS IT? This technique is a very common means of detecting metal within a building through electromagnetic scanning.
WHAT CAN IT DO? This type of detection can pinpoint the location of nails, tiebacks, beams, and pipes, within most building materials.
WHAT ARE ITS BENEFITS? Easy to use and relatively inexpensive ($1,800 to $5,000), this is another device an architect or engineer might be interested in owning.



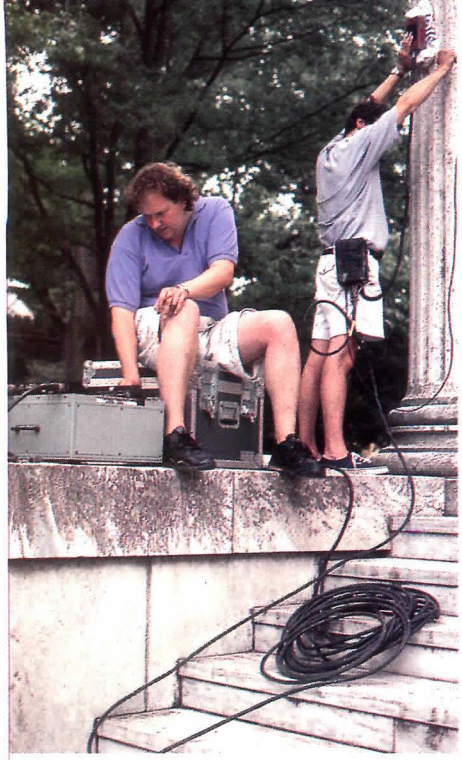
RADAR

WHAT IS IT? Radar is a device that emits and receives electromagnetic pulses to detect and characterize subsurface anomalies.
WHAT CAN IT DO? It is used to locate utilities and structural elements, and detect material flaws such as voids, areas of deterioration, and cracks. Because its return signal amplitude is proportional to the material's density, radar can distinguish between different materials and conditions.
WHAT ARE ITS BENEFITS? Another expensive piece of equipment ($50,000 to $150,000), radar can save considerably if applied carefully by a trained operator.



FLATJACK TESTING

WHAT IS IT? A thin steel envelope is inserted into a mortar joint and pressurized to test compressive strength of masonry.
WHAT CAN IT DO? Flatjacks can, when properly used, reliably indicate existing stresses and the compressive behavior of masonry. Without flatjacks, entire wall sections would have to be removed for laboratory analysis.
WHAT ARE ITS BENEFITS? Relatively easy to use and inexpensive, flatjack testing nonetheless requires careful observation and analytical interpretation to get accurate results. Though mortar must be removed to execute the test, it is easily replaced afterwards.



Engineers from G.B. Geotechnics survey lower portion of cracked marble column with hand-held radar.

Results of radar survey were plotted onto columns (below) to help develop repair strategy.

Radar Saves Marble Columns at Princeton

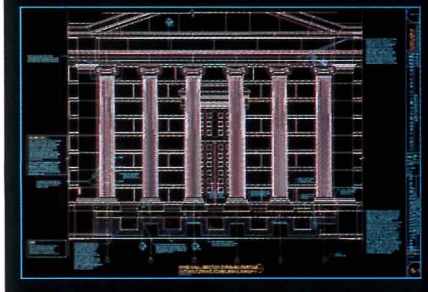
At Princeton University's Whig and Clio halls, twin Greek Revival buildings completed in 1838 for the campus debate society, a dozen marble columns exhibited what was thought to be severe cracking. The first preservation team hired by the university recommended replacing all of the columns—at a cost of nearly $750,000. But the school wanted a second opinion, and Princeton architect Ford Farewell Mills & Gatsch and New York engineer Robert Silman Associates used both ultrasonic pulse-velocity tests and radar, operated by G.B. Geotechnics, to convince the university that replacement was unnecessary.

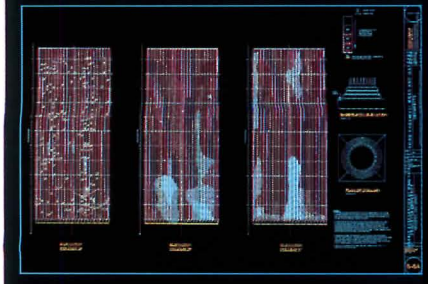
Silman says that the geotechnics team was invaluable for its expertise. "Radar sends a wave into the medium, and when it detects a discontinuity, it sends a wave back and the output is displayed on a monitor," he explains. "The problem is that unless you are an expert, you have no idea what the output means."

After a two-day scanning process, the data was plotted for analysis onto elevation drawings of the columns. "We were able to see that most of the problems appeared toward the bottom of columns, where snow and salt had damaged the bases and plates," says architect Michael Mills. "It was clear that those needed replacement."

As for the cracks, some were quite deep, but could be repaired with an internal pinning procedure. Most of the rest of the damage proved to be near the surface, and the columns' functions were not jeopardized. "We found that the marble was pretty sound," Mills explains. "There were problems at the bottom, and we had to replace the bases and plates, but we were able to use this evaluation technology to prove that the columns could be kept in place."

The architect and engineer devised a complex support mechanism to "levitate" the columns while each base was replaced, and the pinning procedure, when complete, was nearly invisible.





Cracks in 22-foot-long column shafts of Whig and Clio halls (right) were repaired with pinning process. Bases had to be replaced.

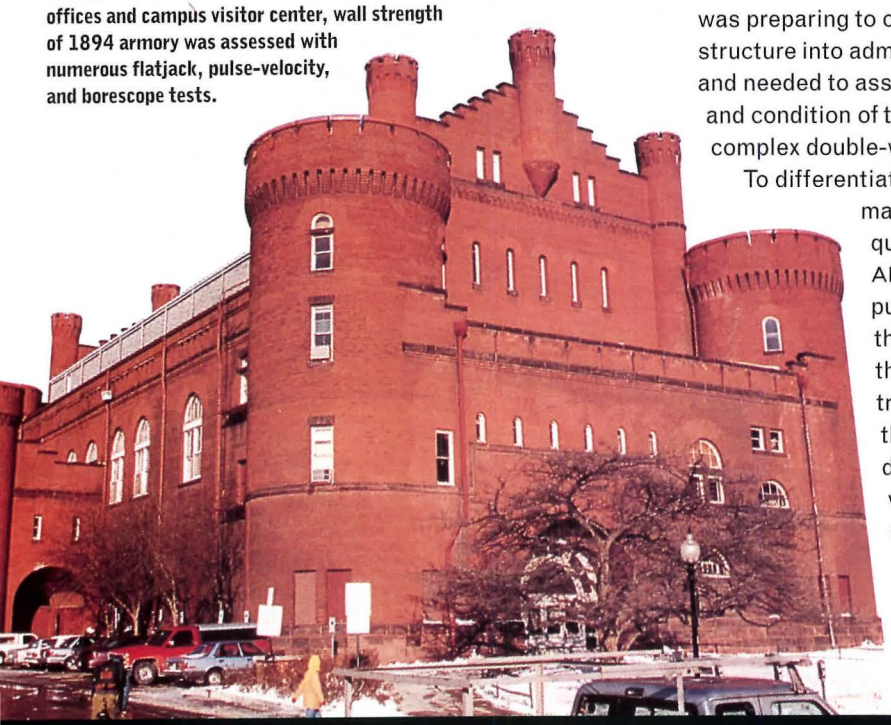
Velocity Tests Prove Masonry's Durability

In December of 1995, architect John G. Waite Associates hired nondestructive evaluation specialists Atkinson-Noland & Associates (ANA) to analyze the structure and material strength of the Armory and Gymnasium at the University of Wisconsin in Madison. The architect was preparing to convert the 1894 structure into administrative space and needed to assess the strength and condition of the masonry in its complex double-wall configuration.

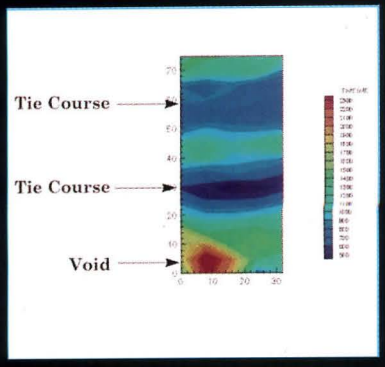
To differentiate high-quality masonry from low-quality masonry, ANA conducted pulse-velocity tests that determined the speed-of-sound transmission, and thus material densities, within the walls. Engineers used small instrumented hammers to generate an impulse wave, which was picked up by a receiver placed on the other side of the wall. A readout registered the speed of the transmission in milliseconds and a subsequent colored chart indicated travel times in various locations.

To supplement these tests, ANA used a metal detector to find wall ties and a borescope, a fiber-optic instrument that allows close examination of hard-to-reach areas, to investigate the cavities between the walls. Flatjacks, pressurized stainless steel bladders, tested the walls' compressive strength. They are inserted into removed mortar joints, which can be repointed later. Without them, entire wall sections would have to have been removed for testing.

These tests showed that the building was largely in very good shape. "The masonry needs minor restoration, including repointing and brick replacement," says Waite associate William Foulkes, "but the evaluation showed no inherent problems with how the building is constructed."

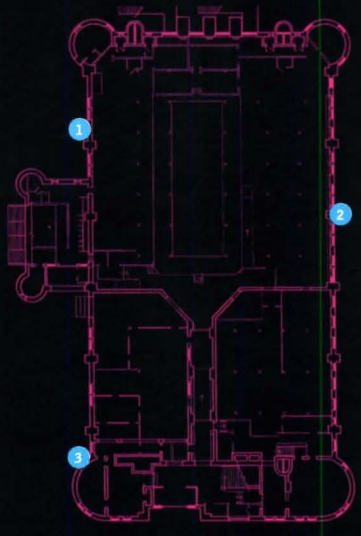


In preparation for conversion to administrative offices and campus visitor center, wall strength of 1894 armory was assessed with numerous flatjack, pulse-velocity, and borescope tests.

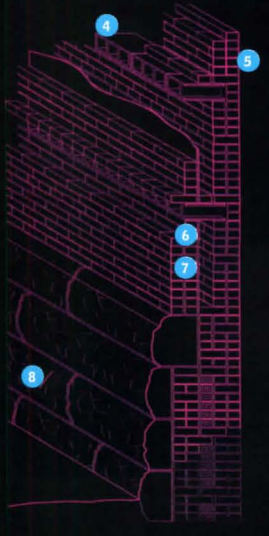


Color-coded graph of pulse-velocity testing shows voids and locations of structural elements.

1. borescope probe
2. flatjack tests
3. pulse-velocity tests
4. structural clay tile tie course
5. double-wythe interior masonry
6. 4 1/2" wall cavity
7. double-wythe exterior masonry
8. sandstone base



First-floor plan



Axonometric section

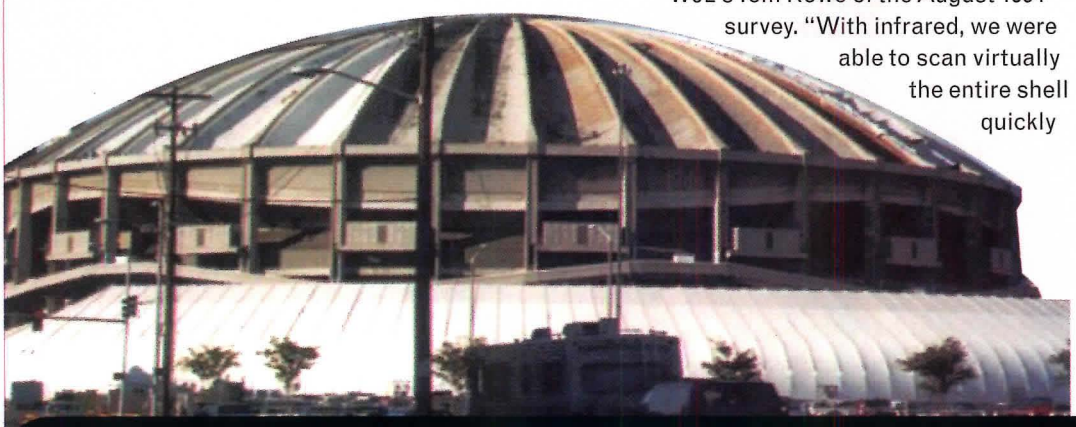
Infrared Scanning Detects Flaws in Stadium Roof

The Seattle Kingdome became the focus of national attention in 1992 when a number of ceiling tiles attached to the underside of the roof fell during a Mariners baseball game. The Mariners moved temporarily to a new stadium, and architect Wiss Janney Elstner was brought in to repair the roof. It tapped St. Louis-based EnTech Engineering to conduct infrared thermographic scans of the roof to find areas of weakness.

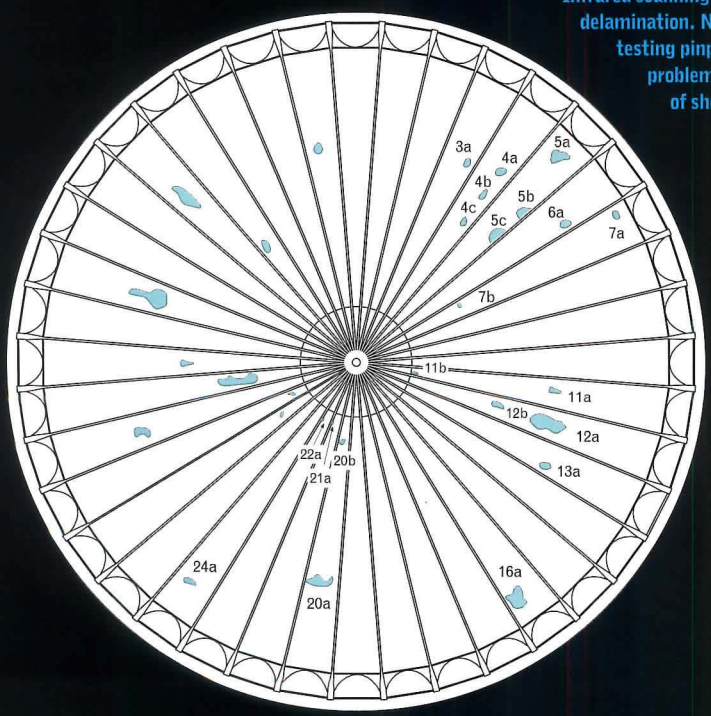
"Clearly, we had an almost insurmountable task, assessing 9 acres of this roof to see if there were large or small amounts of voiding," says WJE's Tom Rowe of the August 1994 survey. "With infrared, we were able to scan virtually the entire shell quickly to identify any relative differences in structural integrity."

From his position at second base on the Mariners baseball diamond, EnTech's Gary Weil surveyed the entire 360,000-square-foot ceiling. His infrared scanner, which seeks out varying heat patterns caused by internal discontinuities, voids, cracks, delaminations, or other anomalies, converted images of each section of the roof into color-coded depictions of these flaws.

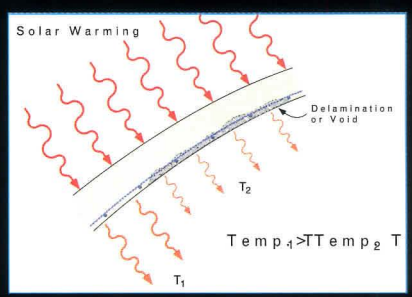
While EnTech's infrared scanner picked several anomalies in the roof, none warranted repair. However, subsequent impact-echo and core-sample tests conducted by WJE near the base of the dome, where the infrared couldn't reach, revealed serious flaws that required treatment. WJE developed and executed a repair strategy, which consisted of applying structural shotcrete to the thrust transfer zones at the base of the dome and treating the ceiling with protectants and acoustical sprays.



Strength of 9-acre Seattle Kingdome's concrete was tested after ceiling tiles collapsed during Mariners baseball game in 1992.



Infrared scanning revealed areas of void and delamination. Near dome base, impact-echo testing pinpointed serious structural problems that required application of shotcrete to correct.



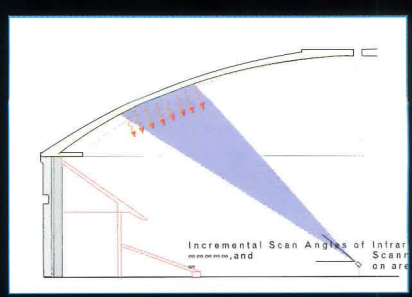


Diagram (top) shows how delaminations and voids can alter temperature of roof. Infrared camera positioned in center of playing field detects changes from several hundred feet away.

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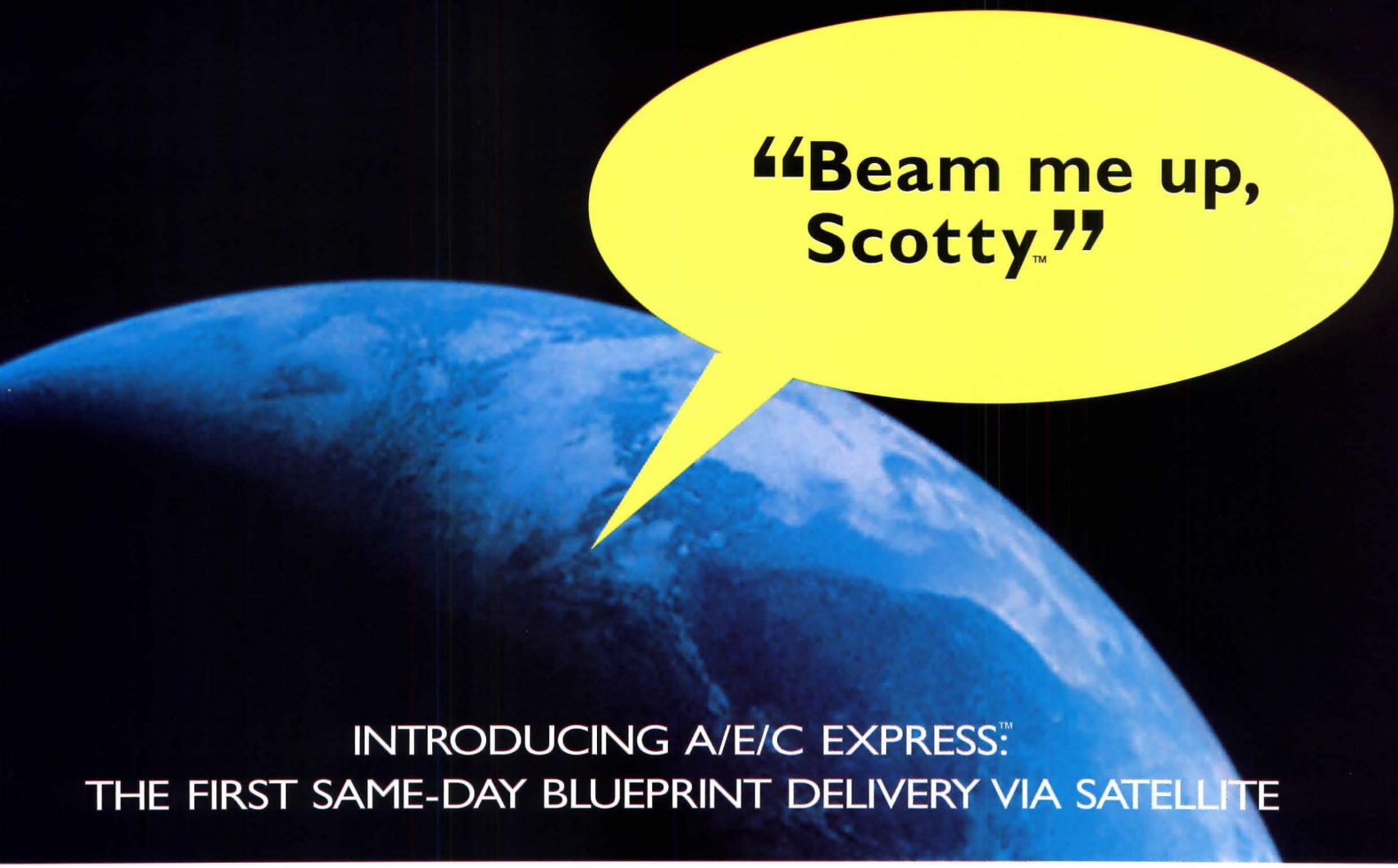

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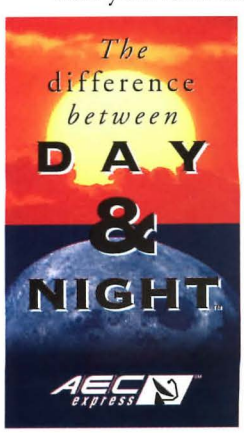

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Monitoring the Future

Advances in computer displays liberate desk space and improve visual quality.

By Bruce Palmer

The benefits of computers are many, but the intrusion of cumbersome equipment into the already cramped environs of the design studio isn't one of them. Computer monitors typically used by architects weigh up to 75 pounds and can consume up to 5 square feet of precious desk space.

But relief is in sight. Manufacturers are coming to the rescue with smaller cathode ray tubes (CRTs) and flat liquid crystal displays (LCDs) that are less than half the size of today's monitors and at the same time offer significant increases in image quality.

The relief is coming not a moment too soon for Tom Hernandez, associate partner and director of computer services at Kohn Pedersen Fox Associates in New York City. "With rent going through the roof, we are interested in any technology that reduces the amount of space that architects require," Hernandez points out. "CAD monitors are just too big. They can't be placed anywhere but right on the desk and you have to break your back to move them."

CAD-savvy architects have always valued large displays. Working with CAD becomes easier when designs can be viewed close-up, which promotes the use of larger monitors. Even with a bigger screen, CAD programs take up large chunks of computer screen "real estate." With CAD's customized menus, tear-off command palettes, and multiple

NEC Technology's new flat liquid crystal display (LCD) monitor improves on technology of notebook computer displays to create larger, brighter images for desktop applications. Monitor is lighter and smaller—but nearly twice as expensive—as standard monitors.

views competing for space, bigger displays are definitely better. Architects will be pleased to know that while the monitor casings will become much slimmer, large screen sizes are not sacrificed with these improvements.

Technology constraints

Traditional CRT-based monitors are bulky because of their technology. Three cathode "guns" (one for each of the three primary colors: red, green, and blue) at the back of the monitor fire electron beams, or rays, at phosphors—chemical particles capable of emitting light—on the inside face of the screen. Since the electron beams must target each of the screen's phosphors, the depth of the monitor is a direct result of the length of the electron beam, which in turn is dependent on the radius of the tube's curvature. As screen sizes increase, monitors thus become deeper.

New adaptations of this common technology promise to reduce monitor size while increasing brightness, clarity, and contrast. Toshiba is attempting to minimize the depth of its monitors by decreasing the distance between the cathode gun and the monitor surface. Scientists have found that by increasing the current used to focus the electron beams, the distance the beam travels can be significantly reduced without sacrificing brightness.

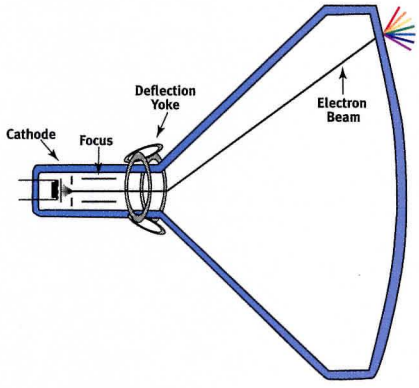
Although this increased current enables large tubes to be contained in smaller housings, the energy consumed to produce the additional voltage results in higher electric bills and a greater environmental impact. A current goal, notes Toshiba engineer Dan Ryan, is to create a CRT combining the space savings of "short neck" tubes with lower power requirements.

Thousand points of light

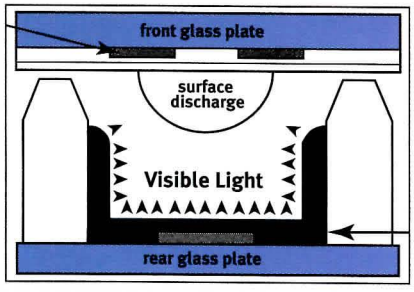
Improvements in traditional color-focusing technologies are also proceeding at a healthy rate.

Desktop LCD monitors (right) are current cutting-edge in display technology, but smaller cathode ray tubes (below left) and new plasma displays (below right) are on the horizon.

Cathode ray tube



Plasma display cell

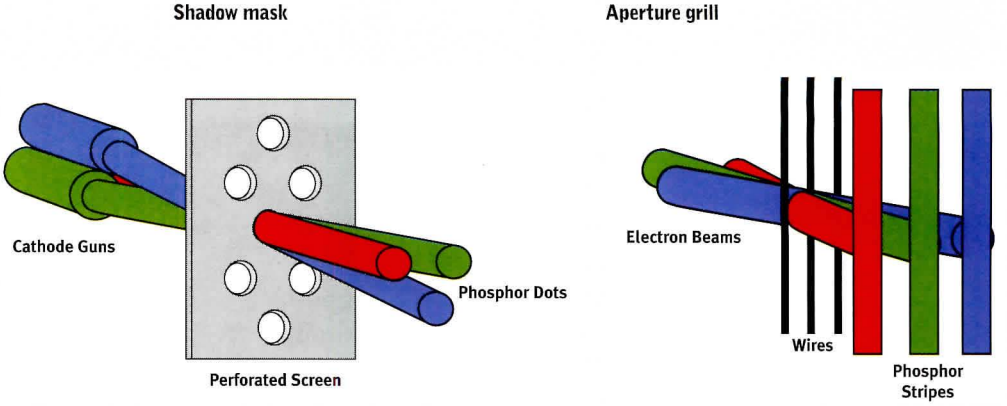


In computer displays, a cluster of three separate phosphors makes up each picture element, or pixel, on the screen. The phosphors—red, green, and blue—are located close enough together to appear as a single dot of color. They are illuminated when excited by their corresponding electron beam. Different colors are produced by varying the intensity of the three beams.

Manufacturers have typically employed two technologies to filter and focus the beams in order to produce the millions of colors the human eye can discern: shadow masks or aperture grills.

A shadow mask is a perforated sheet of metal that is placed between the cathode guns and the screen surface. The electron beams are tightly focused, but the solid portion of the mask ensures that only the phosphors being targeted are illuminated. Each hole in the mask corresponds to one pixel.

In an aperture grill monitor, the light is channelled in a similar fashion, between a series of tiny vertical wires. Because less of each electron stream is wasted, CRTs of this type are more efficient than shadow mask models; they require less electricity and appear sharper. Sony developed the first aperture grill CRT, the Trinitron, in the mid-1960s. The Japanese conglomerate's patent has since expired and



Two LCD technologies create millions of colors human eye can discern. Shadow mask (above left) employs perforated sheet of metal to filter and focus red, green, and blue electron beams. Each hole corresponds to one pixel. Aperture-grill monitors (above right) rely on vertical wires to accomplish the same thing, but with less loss of each electron stream. Though aperture grills produce better images, a new type of shadow mask promises same clarity at lower price.

many other manufacturers are now advancing the technology.

Owing to a clearer, brighter image, monitors employing aperture grills are better suited to graphic-intensive applications like CAD. Predictably, they are also more costly. However, a new technique, also being developed by Toshiba, promises to capture the clarity of an aperture grill at a lower price. This technique, dubbed Microfilter, augments a conventional shadow mask with microscopic coatings on each side of the monitor's glass screen. It increases contrast and reduces power consumption considerably.

Liquid crystal display

During the last five years, LCDs have enabled the display quality of high-end laptop computers to challenge that of desktop monitors. This technology incorporates millions of tiny cells containing transistors that determine the amount of light emitted. Each transistor controls the chemical equivalent of venetian blinds; when a small jolt of current is applied, a chemical reaction twists the microscopic liquid crystals, allowing light to pass through. The light itself is produced by a backlight and is filtered to produce the desired color.

LCD displays have excellent clarity, consume small amounts of power, and are exceptionally thin. They are also expensive, prone to flaws in the manufacturing process, and require near straight-on viewing. Until recently, manufacturers could only reliably produce LCD display units smaller than 13 inches diagonally. Although that size is sufficient, even spacious, for a notebook computer, it remains too small for daylong business use, not to mention CAD. But transistors have continued to shrink in size, and manufacturers are taking advantage of advanced production techniques in new state-of-the-art factories, paving the way for new, larger LCD screens.

NEC's award-winning MultiSync line now includes 14- and 20-inch flat screen LCD monitors. And unlike CRT-based monitors, which measure the size of the glass, not the image, the size rating of an LCD monitor is the actual image size.

NEC's LCD2000 offers a full 20-inch viewable image yet is less than 9 inches deep and weighs only 22 pounds. However, these monitors command a price of nearly $8,000. NEC's Dave DeVries acknowledges that flat-screen LCDs are not yet monitors for the mainstream, but expects prices to continue to fall. "By the year 2000, we expect LCD prices to be more in line with the CRT market," DeVries maintains. "But it may be 10 years before flat panels become the norm."

Plasma display panels

The future of the flat-monitor market may lie in plasma display panels (PDPs). Currently used for advertising displays, these units rely on phosphors like CRTs but contain the phosphors in individual cells like LCDs. PDP technology is attractive because it combines the brightness and wide viewing angle of traditional cathode tubes with the small size of LCD panels.

PDP cells today are typically just under 1 millimeter square—tiny to the naked eye but much too large for high-resolution CAD work. Pricing is also a barrier. Plasma displays are two to three times more expensive than similarly sized LCD panels and cost 10 to 12 times more than CRT-based monitors. Architects can plan on seeing these monitors appear on the market within the next five years.

While the vast majority of manufacturers' research and development dollars are being spent on refinements to current display technologies, the computer monitor of the future may not be recognizable by today's standards. Researchers at the University of Washington, working with Seattle's Microvision, are developing systems, worn like eyeglasses, which project computer images directly onto the retina. The monitor, as we now know it, won't exist. Concepts such as screen size, monitor resolution, and color depth will become obsolete in a world where full-view, true color images are beamed instantly into the brain.

Microvision has prototyped a retinal projection system for CAD but doesn't expect it to be commercially available for at least another 18 months. When it does arrive, this technology will offer the largest possible viewing area with infinite room for multiple views and toolbars. In the world of CAD modeling, it will enable truly immersive experiences within three-dimensional models. Architects and clients alike will be able to fine-tune designs from within buildings yet to be built.

Bruce Palmer is the director of technology in Gensler's New York office.

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Circle 122 on information card

Technology

Roofing Built to Last

Introduced 25 years ago, single-ply membranes were fraught with problems. Now they're one of the most popular roofing systems, with improved thermal properties and attachments.

Salina, Kansas, architect Max Bishop specified modified bitumen single-ply roofing for a high school in El Dorado, Kansas, based on the system's puncture resistance, strength, and flexibility. Domed areas were affixed with heat-welded membrane. Parabolic sections were attached with fire-rated, mopped-in asphalt.

By Jack Klein

Single-ply roofing systems had a rough start in the United States. These flexible, 1/4-inch-thick plastic and rubber membranes were introduced during the 1970s Arab oil embargo to compete against petroleum-dependent, built-up roofing (BUR) systems, but were not sufficiently durable under the stresses of North America's temperature extremes. Numerous roof failures were reported with the initial application of these membrane systems.

But manufacturers have reformulated some types of flexible membranes and reinforced others, and now the systems are among the most popular roofing systems on the market today.

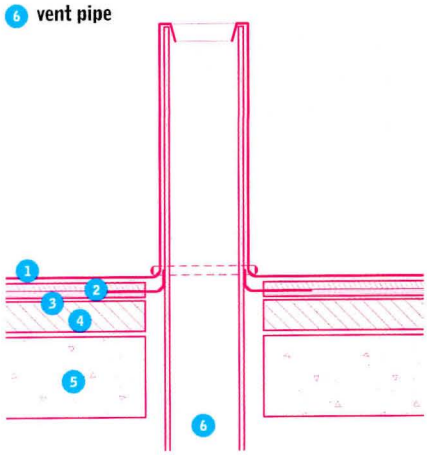
Durable and lightweight

The reasons for single-ply's popularity are many. The biggest advantage is that the single-ply sheets are prefabricated, maximizing quality control and product consistency. BUR, on the other hand, is constructed on-site by contractors from layers of roofing felts and asphalt. By reducing the amount of required labor, greater control over the final product is maintained.

Other benefits of single-ply roofing are durability coupled with light weight, ease of installation, flexibility, and a wide range of attachment methods, surface colors and treatments, and edge materials. Single-ply roofing can also be formulated to be resistant to ultraviolet (UV) light and wide temperature extremes.

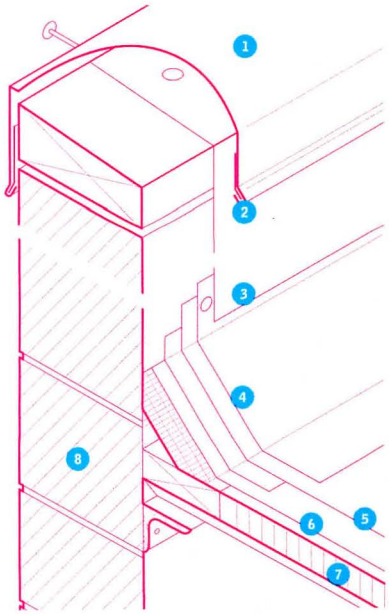
Single-ply roofing is often referred to by its method of attachment to the substrate. For instance, ballasted membranes are typically held in place by the weight of river rock spread on the roof. Fully adhered products are bonded directly to the insulation underlayment with adhesives. Mechanically attached

1. modified bitumen flashing
2. membrane
3. base/ply sheets
4. insulation
5. deck
6. vent pipe



Vent pipe detail

1. metal cap flashing
2. continuous metal cleat
3. modified bitumen wall flashing
4. modified bitumen base flashing
5. modified bitumen membrane
6. base/ply sheets
7. rigid insulation
8. parapet wall



Parapet wall detail

membranes utilize fasteners to connect membrane to structure.

Each method has its advantages and disadvantages. Ballasted membranes are cost-efficient and work well when subjected to a high degree of building movement. However, the weight of the rock ballast adds substantially to the load on the roof deck and the rocks themselves may become airborne missiles during heavy winds. Fully adhered products are lightweight and offer great wind-uplift resistance, but only when the sheets are properly adhered and the seams properly sealed. Mechanically attached membranes are easily installed, but connections must be carefully waterproofed where the fasteners penetrate the surface.

System evaluation

There is no consensus among architects as to the best system. Bill Rice, an Atlanta architect with Williamson and Associates, a consulting firm specializing in roofing and waterproofing, tends to stay away from ballasted single-ply. As Rice points out, "If you have a leak, it's difficult to find the puncture in the membrane. Protruding nails or screws beneath the gravel can end up puncturing the membrane."

On the other hand, architect John Bunch of Robinson, Green, Beretta Corporation in Providence, Rhode Island, has been specifying single-ply for as long as it has been around; 75 percent of these applications are ballasted roofing. "Ease of installation is the primary advantage we've found for ballasted systems," Bunch explains. "Unwanted penetrations can occur in these applications, but we're fortunate in that we use some very good roofing contractors. With a good contractor, you'll very seldom run into that kind of problem."

Rob Morris, a principal of Gauthier Alvarado & Associates in Falls Church, Virginia, says he avoids mechanically attached systems, because that's when a lot of problems crop up from improper attachments and membranes that have been pierced. "We pretty much stick with fully adhered and ballasted systems because they seem to be the most trouble-free," he explains.

Modified Bitumen Offers Strength and Flexibility

The use of modified bitumen (often referred to as "mod bit" in the field) in the United States is relatively new compared to Europe, which has taken advantage of the material for several decades now. Modified bitumen is obtained by blending materials such as styrene-butadien-styrene (SBS) or atactic polypropylene (APP) with asphalt. These combinations serve to increase the membrane's flexibility along with its strength.

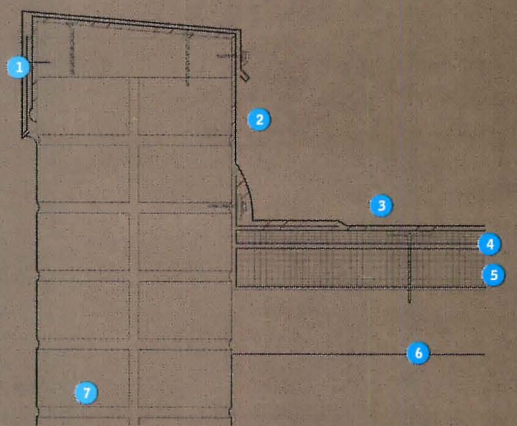
Modified bitumens are seamed with hot or cold asphalt adhesives or a torch to melt the material in the seam area. While installation using cold adhesives is gaining in popularity as the roofing systems advance, APPs are traditionally torch-applied, since mopped applications often cool too quickly to be effective. With cold adhesives, a good chemical bond may be obtained. Cold-process applications are useful when hot asphalt is difficult to get onto the roof.

Poor design and incorrect installation of single-ply EPDM roof at Milwaukee's Central Library led to early failure. During 1996 restoration, Chicago's Legat Architects found roof membrane in excellent condition, but restored seam reinforcement, base flashing, reinforcing perimeter strip, and glue on parapet walls. Efforts saved $750,000 in replacement costs.

Thermosets Withstand Chemical Breakdown

Thermoset membranes are often referred to as "rubber roofing" because they are compounded from rubber polymers. The most commonly used polymer is EPDM, a compound synthesized from ethylene, propylene, and diene monomer. EPDM is popular because of its ability to withstand chemical breakdown from exposure to ultraviolet (UV) rays and its resistance to the most common environmental degraders of roofs. A cured material, EPDM is a thermoset, which means that the material's molecular structure is "set" due to heating during manufacturing. EPDM can be manufactured in thicknesses ranging from 30 to 90 millimeters, is available in a variety of colors, and may be reinforced with fiberglass or polyester or nonreinforced. Thermosets are seamed using either liquid adhesive or butyl tape.

1. steel coping
2. reinforced 60-mm EPDM
3. reinforced 60-mm EPDM
4. high-density fiberboard
5. polystyrene insulation
6. roof deck
7. masonry wall



Roof edge detail

Membrane types

Single-ply membranes comprise thermosets, such as EPDM (an elastometric polymer synthesized from ethylene, propylene, and diene monomer), which are rubber-based; thermoplastics, such as polyvinyl chloride (PVC), which are plastic-based; and modified bitumen, which combines the prefabrication process of single-ply with the traditional on-site installation methods of BUR.

Thermosets, thermoplastics, and modified bitumens are set apart from each other by their types of seams. Thermosets use adhesives or tape to close seams; thermoplastics are welded by applying hot air or solvents; and modified bitumen sheets are torch-welded or sealed with either a hot or cold asphalt adhesive.

Among single-plys, thermosets, EPDM in particular, are the most often-used membranes in the U. S. today. According to Thomas Hutchinson, vice president of Legat Architects in Chicago, which specified $20 million in re-roofing alone last year, "I would have to say 85 to 90 percent of the roofs we do are single-ply, with the majority of those being EPDM." Hutchinson prefers this type of roofing for its UV-resistance and flexibility. "It moves with buildings, which is a major requirement of metal decks and light-gauge steel framing. However, we certainly look at every roof separately, and don't just put down an EPDM system if it's inappropriate."

Rice, on the other hand, prefers thermoplastics because of their welded seams. "When you weld a PVC seam, that seam is as strong or stronger than the membrane itself," he explains. "It's also more forgiving when applied in adverse conditions. Cold weather, for instance, isn't as much of a concern as it is with EPDM, where you use tape or liquid adhesives for the seam."

Better thermoplastics

The early 1980s witnessed the emergence of hundreds of single-ply manufacturers. By the end of that decade, many of them were out of business because of bad products and warranty claims. Surviving in

the 1990s is a handful of manufacturers designing quality systems.

One of the past problems with PVC single-ply products was the shattering of the membrane during extreme temperature shifts. John Greko, vice president of engineering and quality assurance for Duro-Last, a manufacturer of PVC single-ply membranes, claims this flaw is no longer a problem. "The shattering phenomenon came when we had a lot of nonreinforced PVC sheets formulated for the European market, and when they brought the sheets to the United States, they had a problem with temperature extremes they hadn't found in Europe," maintains Greko. This problem was ultimately solved by reinforcing the membranes so they are better able to withstand dramatic temperature shifts.

Modifiers and fillers

The newest player on the single-ply market is the heat-welded thermoplastic membrane, which requires adhesives and sealants like EPDM. Unlike PVCs, where plasticizers and other modifying agents are added to make the membrane more pliable, thermoplastics are inherently more flexible and less prone to shattering.

They are also cost-competitive with EPDMs, with the added advantage that the roof can be applied at any time of the year, since the seams are heat-welded. The solvents and seam adhesives used in thermoset applications don't bind properly in the northern states during the winter because of the cold.

Thermoplastic systems also help regulate temperature. "The fact that they are white and reflective means much less air-conditioning load is put on a building," says Jim Seeley of Stevens Roofing Systems.

Manufacturing thermoplastics (TPO) is also very environmentally friendly, according to Seely. "Polyethylenes and polypropylenes are very basic plastics and easily recycled," he asserts. "We send nothing from the TPO manufacturing process to the landfill; 100 percent is recycled. A TPO roof can be torn off and recycled once it has reached the end of its useful life."

This country's first modified bitumen systems were produced in the mid-1970s. Composed of asphalt flux and polymer modifiers, these membranes are typically reinforced with either polyester or fiberglass. The modifiers retard the product's aging and improve thermal performance at both high and low temperatures. Fillers, fire-retardants, and granular surfacing materials are added, improving the longevity and safety of the membranes, offering protection from UV exposure.

"Due to the redundancy of multiple layers of protection, some owners just seem to feel more comfortable with modified bitumen," Bunch explains. "There is still a feeling that thicker is better. This, in fact, may be true in cases where you have a school or other institutional building with a lot of foot traffic on the roof."

Hospitals with large, roof-mounted HVAC systems are also likely to see a lot of foot traffic from routine maintenance. "If you have a 45-millimeter-thick EPDM roof, it's not going to make it because of all the abuse it would have to take," says Kent Blanchard, director of marketing for Tamco, which manufactures both styrene butadiene styrene (SBS) and atactic polypropylene (APP). "That's the kind of situation where you'd probably want to install a modified bitumen with a polyester reinforcement. It's very difficult to puncture, especially if you install a double layer around the HVAC unit. Over the long run, you'd be saving money."

On the other hand, Blanchard points out that a warehouse with a long expanse of flat roof without a lot of traffic on it may be an ideal situation in which to use an EPDM fully-adhered or ballasted system.

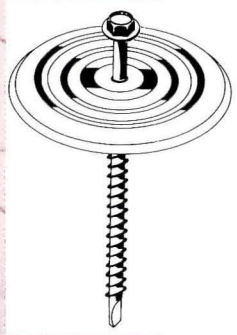
"The building's use and cost have to be taken into account," Blanchard explains. "The architect has to decide what to get out of the building before deciding what to put on the building."

Jack Klein is a Tampa, Florida-based freelance writer.

Thermoplastics Offer Strong Seams

Thermoplastic membranes are formed from plastic polymer-based sheets; the most common is polyvinyl chloride (PVC). Although a number of formulas are available, most PVC is made flexible during the manufacturing process through plasticizers, and usually include a reinforcement layer of either fiberglass or polyester, to increase the sheet's strength and enhance dimensional stability. The seams in thermoplastic applications are welded through heat or chemical solvents. Manufacturers claim the resultant seams are often stronger than the membrane itself.

Ballasted single-ply systems employ either small, loose stones or larger panels, such as these concrete pavers specified by Legat Architects for Milwaukee Central Library. Larger stones are better for taller buildings, where wind might be a concern.



Mechanical attachment systems often incorporate metal or plastic stress plates and tightly threaded screws to secure membrane to deck.

Installing Single-Ply Membranes

Formulations for membranes, insulation, insulation facers, and adhesives are constantly changing. As a result, architects should contact manufacturers' technical departments before installing a roof. In re-roofing applications, manufacturers suggest that the designer confirm the compatibility of new components with the existing roof type. For example, some manufacturers do not recommend certain types of insulation to be placed directly on coal built-up roofing systems.

Loose-laid ballasted single-ply membrane systems are among the oldest and most commonly specified single-ply roofing systems. They are relatively inexpensive and simple to install since large membrane sheets measure as large as 50 feet wide and 200 feet long. These systems are most often specified on large, open areas with either a steel or concrete deck.

The typical ballasted system consists of a membrane placed loosely over insulation board and ballast applied over the membrane to hold it in place. Such systems, however, are typically not recommended if the roof slope is greater than 2 inches over a 12-inch span because the gravel may slide off. Some roofs may be unable to support the ballast, which ranges from 4.5 pounds per square foot to more than 25 pounds per square foot.

Fully adhered single-ply membranes eliminate the ballast weight and leave the membrane exposed, affording the opportunity to use colored membranes and coatings.

Typically, an insulation substrate is fastened to the roof deck, over which a membrane is attached with a solvent- or water-based bonding adhesive, asphalt, or spray-foam urethane.

Fully adhered membranes are usually smaller than those of a ballasted system—about 19 feet long by 25 feet wide. Despite their light weight, these systems offer a great resistance to wind uplift. Before installing the membrane, the adhesives must be allowed to dry sufficiently and adhesive solvents must have evaporated to prevent damage to the insulation facer.

Mechanically attached or mechanically fastened systems are favored by a growing number of architects because they are lightweight and easy to install. Mechanical fastening may also be applied regardless of temperature and moisture conditions. Such systems use fastening devices to attach the membrane to the structure. Problems with fastener corrosion have been remedied by manufacturers.

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Roofs shown depict potential usage.

Circle 124 on information card

Practice

Tips on Tax Reform

Firm principals and sole practitioners benefit from a sweeping new federal tax law that boosts office deductions.

By Barry B. LePatner

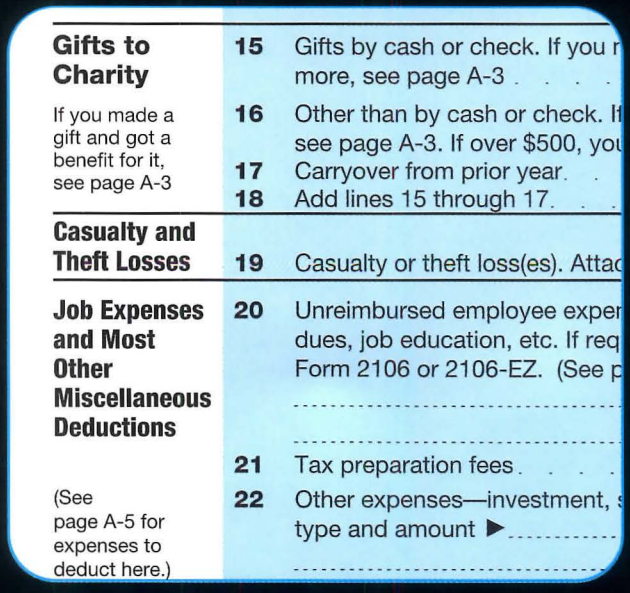
It's tax planning season again, and this year, there's actually good news for architecture firm principals and sole practitioners. In what is being termed the biggest overhaul of the tax code since the Tax Reform Act of 1986, the recently enacted Taxpayer Relief Act of 1997 offers architects several welcome changes at filing time this year. Although the extensive changes will have a positive effect on your business's bottom line, the act is quite complex and will no doubt also help the bottom lines of tax accountants nationwide.

There are several important provisions that are relevant to architects in firms large and small. Among the major changes are new rules for health insurance deductions, individual retirement accounts (IRAs), a firm's contract accounting, alternative minimum tax payments, estimated tax payments, business meal deductions, benefits such as parking and donations of computer equipment, deductions for a home office, and loss carrybacks.

Unless you are totally naive or earning less than minimum wage, being aware of these provisions should be impetus enough for you to consult a tax advisor well-versed in how service professionals—preferably how architects—operate their practices. Prepare carefully.

Health insurance benefits

We all know that health insurance for self-employed professionals is a very costly proposition. To make these costs more manageable and to create incentive for business start-ups, the deduction for health insurance premiums has been increased. Currently, self-employed architects can deduct 40 percent of their health insurance costs. The new law raises the deductible portion as follows: 45 percent in 1998 and 1999, 50 percent in 2000 and 2001, 60 percent in 2002, 80 percent from 2003 through 2005, 90 percent in 2006, and 100 percent in 2007 and thereafter.



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If you made a gift and got a benefit for it, see page A-3	16	Other than by cash or check. If see page A-3. If over $500, you
	17	Carryover from prior year . .
	18	Add lines 15 through 17. . .
Casualty and Theft Losses	19	Casualty or theft loss(es). Attac
Job Expenses and Most Other Miscellaneous Deductions	20	Unreimbursed employee exper dues, job education, etc. If req Form 2106 or 2106-EZ. (See p
	21	Tax preparation fees . . . .
(See page A-5 for expenses to deduct here.)	22	Other expenses—investment, type and amount ▶

Retirement accounts

Architects who look to the future of their family and wish to save for their retirement, their children, and grandchildren through tax-deferred growth may now be in luck. New changes in the law regarding traditional IRAs mean more people with higher incomes will be eligible to make deductible contributions. Congress is raising the income level above which the annual $2,000 per year IRA contribution is not deductible. The term for this income level is "phase-out," meaning that at a certain income level or above, the contribution is no longer deductible.

Starting in 1998, for active participants in an employer-sponsored retirement plan, the phase-out range for single taxpayers rises from a range of $25,000 to $35,000 to a range of $30,000 to $40,000; by 2005, those phase-out ranges will rise to between $50,000 and $60,000. For example, before the enactment of the 1997 law, a single taxpayer earning $24,999 could deduct the $2,000 IRA contribution, but a single taxpayer earning $35,000 could not. Now, the upward sliding scale for phase-outs allows more and more individuals to deduct their retirement savings.

As for the married taxpayers, the phase-out is increased in 1998 from a range of $40,000 to $50,000 to a range of $50,000 to $60,000. By 2007, the phase-out limits will increase to $80,000 to $100,000.

Even the spouse of an architect enrolled in a qualified pension plan gets to join the action. Prior to the new law, if an active participant in a qualified pension plan could not deduct IRA contributions, then neither could that person's spouse. However, effective in 1998, the new law states that where one spouse is an active participant in a qualified pension plan during a tax year and the other is not, the nonparticipant's IRA contribution deduction depends on the couple's combined adjusted gross income. For these nonparticipating spouses, the phase-out range is $150,000 to $160,000.

For those architects interested in a tax-deferred vehicle, ask your friendly neighborhood tax adviser about the Roth IRA, which deals with deductible distributions rather than contributions. Of course, there are

many conditions that must be met in order to be able to take advantage of this new type of IRA.

Easier accounting

Back at the office, many architectural firms with long-term projects account for the associated income and costs by utilizing the "percentage of completion" method of accounting. Firms that employ this accounting method should now be aware that they have an option that eliminates the need, under certain circumstances, to apply the "look-back" method for contracts completed in taxable years ending after August 5, 1997. Because the "look-back" method is too complex to summarize in a few words, we would advise that your tax accountant worry about whether this method applies to your firm.

Another change that will benefit smaller firms is the all-powerful Alternative Minimum Tax, or AMT. The AMT was intended to prevent wealthy taxpayers entitled to many deductions from not paying any tax at all. The AMT is now waived for all incorporated businesses with gross revenues averaging less than $5 million a year for the three years beginning in 1995. This welcome exemption becomes effective for taxable years beginning in 1998. The exemption will continue in future years as long as the average gross revenues stay below $7.5 million.

For those firms not exempt from filing the AMT, the new tax law repeals the separate depreciation adjustment of the AMT. In other words, property such as computer equipment, placed in service after 1998, will have the same recovery period used for purposes of the AMT depreciation adjustment as the recovery periods used for depreciation under the regular tax law.

Better cash flow

All architects want to be sure that their firm's cash flow for the current year is sufficient to conduct business in a proper fashion. A provision in the new law will assist your firm in increasing cash flow by paying less estimated federal income tax. Currently, to avoid penalties, a taxpayer must withhold taxes and estimated tax payments equal to 90 percent of the current year's tax or 110 percent of the prior year's tax if the adjusted gross income of the previous year exceeds $150,000. The new law states that the estimated 1998 tax only be 100 percent, or equal to, the 1997 tax. Accordingly, lowering the tax for 1997 will result in a savings, benefiting the firm's cash flow in 1998.

With that extra cash, architects could buy occasional meals for

Firms' cash flow should be smoother, thanks to more reasonable estimated tax payment provisions.

HIGHLIGHTS OF THE NEW TAX LAW

1. Revised rules for accounting on multiyear projects
2. Greater deductibility of business meals
3. Improved exemption for parking benefits
4. New deductions for equipment donations
5. Stricter retroactive provisions for tax losses
6. Easier estimated tax payments
7. Broader alternative minimum tax exemptions
8. Greater deductions for health insurance for self-employed
9. More attractive IRA deductions
10. Easier home office deductions

their employees. Formerly, when employers provided meals for employees, those meals were either not deductible or only partially so. With the enactment of the new law, however, certain meals that can be excluded from an employee's income because they are provided for the employer's convenience are now fully deductible by the employer. This provision is effective beginning with the 1998 tax year.

In addition to having the boss buy lunch, all employees who drive to work welcome parking as fringe benefit in their compensation packages. Now, the new law makes it more feasible for an architectural firm to offer parking benefits. Beginning in 1998, an employer can offer either $170 (subject to inflation adjustments) per month to an employee for parking or an option of choosing a cash-payout option. The new law differs from the old law in that beginning in 1998, the employer may offer both options and if the parking option is chosen, the parking money is nontaxable to the employee. In addition to income tax savings to the employee, it is also a payroll tax savings to the firm.

Computer credits

If your firm has decided to give away computer technology or equipment, there is now an additional deduction to be had. In order to take advantage of this deduction, your firm must be a C corporation that makes a charitable deduction of any computer technology or equipment to a qualified elementary or secondary school for educational purposes. Once this donation is made, your firm can deduct the fair-market value of the equipment reduced by one-half of the gain. However, the deduction cannot exceed twice the cost of the equipment less any depreciation.

Lastly, as savvy businesspeople have quickly learned, two years with the same computer equipment and technology is more than a lifetime. Accordingly, the ability to deduct this contribution is limited to computer technology or equipment acquired by your firm less than two years earlier.

Home-based architects have long been at risk deducting home office costs. The 1997 tax revisions makes these costs easier to deduct from their returns.

Work at home

One of the most important deductions to self-employed architects is the home office. The home office deduction has long been one of the prickliest deductions to take; many tax accountants have advised their clients, correctly or not, that the home office deduction offers the Internal Revenue Service a "red flag" for an audit.

The new law relaxes the current narrow scope for home office deductions and allows many self-employed taxpayers to claim a federal income tax deduction for the money they spend to maintain these offices. An office at home can now generally qualify as the principal place of business if it is used regularly to conduct administrative or management activities, and there is no other fixed location of the business where these activities can be conducted.

This law means that, within certain limits, an architect will be able to deduct from income at least part of the money spent to maintain his or her home, including electricity, heat, real estate taxes, and so on. This provision will be effective beginning the 1999 tax year.

Of course, every tax law revision is not positive. One negative aspect that may affect your firm pertains to the carryback of tax losses. In general, the carryback law offers a tax refund opportunity that assists a business with an influx of cash following a bad year. As it stood before the new tax law, your firm's loss for the 1997 tax year could be carried back three years. The loss could therefore be used to reduce income and taxes for the prior years when profits were earned. Any unused loss after the carryback could currently be carried forward 15 years.

Under the new law, such losses can only be carried back two years and carried forward for 20 years. The potential consequence is that if your firm incurs a loss in the year 2000, you can only offset income with such a loss for 1998 and 1999. Under the old law, you could have carried back the loss to 1997, offsetting past revenue and possibly recouping extra cash for operations not previously at your disposal.

As any tax novice can see, the Taxpayer Relief Act of 1997 offers many tax benefits to the architectural firm, with few negative ramifications. Accordingly, lower tax payments will result in an increased cash flow for both employers and employees.

It's prudent to retain a professional tax advisor as soon as possible in order to take advantage of the many revisions. Congress is already busy amending certain obscure, unintended loopholes in the law, though most of it should, happily, remain in tact. They didn't call it "relief" for nothing.

Attorney and certified public accountant Robert M. Boder and Howard Misthal, senior tax partner of David Berdon & Company, contributed to this article.

	23	Add lines 20 through 22
	24	Enter amount from Form 1040, line 32.
	25	Multiply line 24 above by 2% (.02
	26	Subtract line 25 from line 23. If lir
Other Miscellaneous Deductions	27	Other—from list on page A-5. Lis
Total Itemized Deductions	28	Is form 1040, line 32, over $114,7 **No.** Your deduction is not limite for lines 4 through 27. Also this amount or your standa **Yes.** Your deduction may be lim

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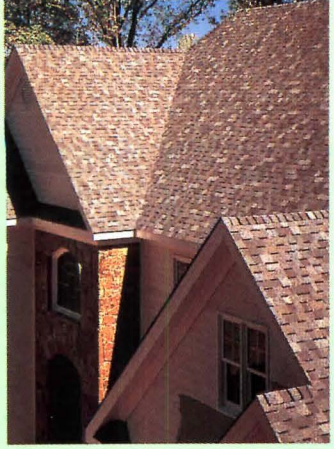


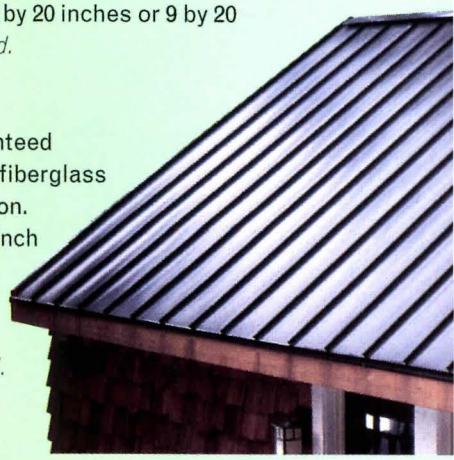
2

Roofing Systems

Shingles, tiles, and metal texture rooflines and resist weathering.

1 Flame-Resistant Shakes
Perfect Choice plastic roofing system by American Sheet Extrusion Corporation now incorporates flame-resistant NORYL resin by GE Plastics. When the resin is exposed to flame, the plastic chars immediately and is extinguished. Perfect Choice is available in interlocking panels measuring 18 by 20 inches or 9 by 20 inches. *Circle 291 on information card.*

2 Stain-Resistant Shingle
Highlands Shangle AR from Certainteed incorporates copper granules in its fiberglass shingle to prevent algae discoloration. The roofing is supplied in 12-by-36-inch fiberglass base systems that are installed rapidly with self-sealing adhesive strips attached underneath. *Circle 292 on information card.*



3

3 Metal Roofing
Lightweight and noncombustible, Custom-Bilt Metals standing-seam metal roofing is ideal for dry climates where brushfires threaten residential areas. Roof panels are made of corrosion-resistant steel alloy coated with weather-resistant polyester in 22 colors. The panels weigh 1 1/2 pounds per square foot. All roofing is formed and cut to size on-site, eliminating waste material disposal. *Circle 293 on information card.*

4

4 Concrete Tile
Monier recently added 48 new colors of concrete roof tiles to its 2000 collection. Small dots of multiple colors are juxtaposed on the tile to create each of the new colors, which include simulated patina, clay, and stone. Flat, barreled, and fluted styles are available. All tiles measure 13 by 16 1/2 inches.
Circle 294 on information card.

5

5 Asphalt Shingle
Timber Ridge asphalt hip and ridge shingle is the latest addition to GAF's line of fiberglass and asphalt roof products. Modified asphalt infused with polymers surrounds a woven fiberglass core to improve flexibility and resist cracking. Timber Ridge shingles have an 8-inch exposure and are available in 8- or 10-inch widths; they are supplied in boxes of 50.
Circle 295 on information card.

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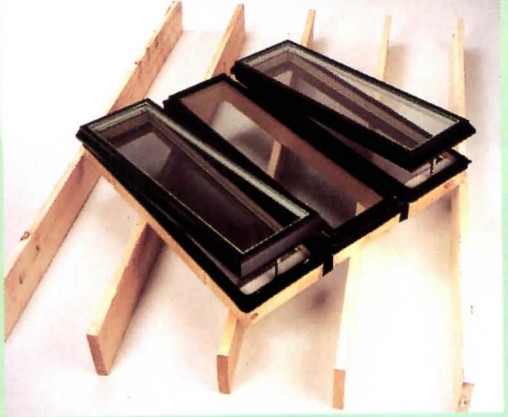


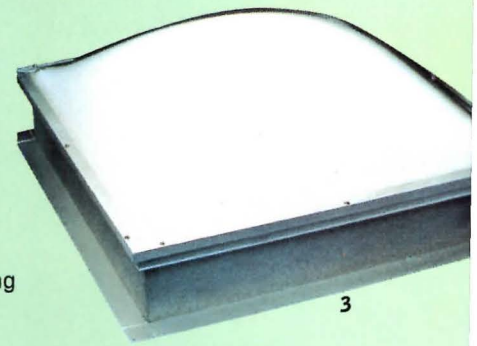
2

1 Aluminum-Framed Collection
Wasco Products offers its Classic skylight collection in four profiles: pyramidal, octagonal, hipped, and pitched. Urethane strips attached to the skylight's aluminum frame prevent heat loss, while perimeter gutters collect and drain condensation. Pyramid skylights fit 3- to 7-foot-square ceiling openings; hipped and pitched models are offered in four standard sizes and can be custom-fit. *Circle 296 on information card.*

Skylights

New skylights combine strength and energy-efficiency with streamlined design.

2 Ventilating Window
Roto Frank recently added two new sizes of rectangular roof windows to its Sunrise Series. Both models are 13 3/4 inches wide and install between rafters without interfering with roof framing. All windows include energy-efficient glass filled with argon to prevent heat loss. Venting and fixed models are available. *Circle 297 on information card.*



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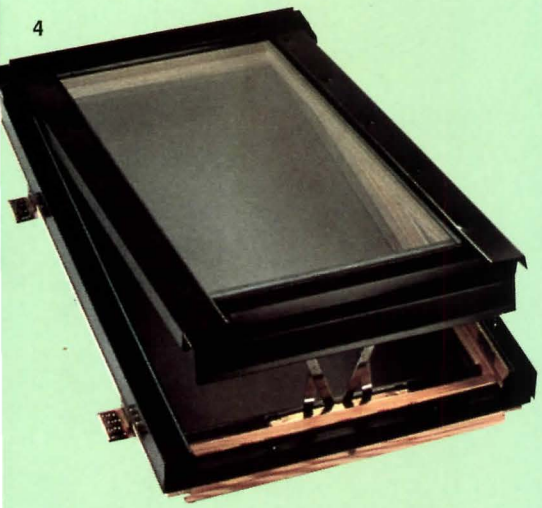
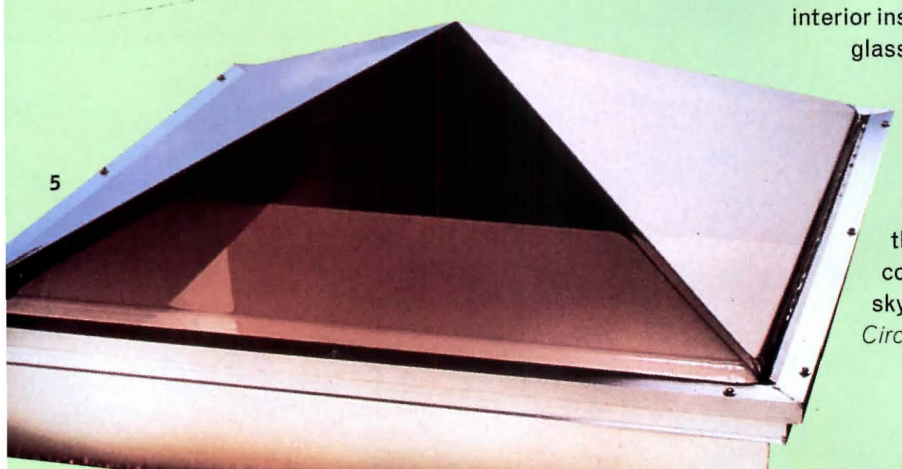


3 Acrylic Dome
Naturalite's latest acrylic resin domed skylights are now available in single- and double-domed models. Each skylight is anchored to an extruded aluminum frame with integral condensation gutter and drainage slots. The dome is attached to a 9-inch-high aluminum base surrounded by a layer of insulation. Naturalite offers domes in 20 standard sizes. *Circle 298 on information card.*

4 Adjustable Skylight
Velux designed its new VSC line of venting skylights to simplify installation. Adjustable brackets position skylights flush with high- or low-profile roofing materials and a removable sash eases interior installation. All skylights feature double-paned insulated glass and can be specified in five sizes with three glazing options. *Circle 299 on information card.*

5



5 Protective Pyramids
The latest Vertex pyramidal skylights incorporate GE Plastics' Lexan, a plastic resin purportedly stronger than traditional acrylic. Each skylight features a UV coating and a perimeter condensation gutter. The skylights fit 19- to 75-inch-square ceiling openings. *Circle 300 on information card.*

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Name Game

What is a firm trying to communicate when it changes its name?

Say "IBM" and the world will know what you're talking about. But what about "HLM?" Its principals hope that these initials will also be associated with distinction. In a world where image matters, your firm's name better mean something, whether the product is hard drives or office towers. And if you think image is irrelevant, why are so many architectural practices pruning their monikers in an effort to project something new? In the words of marketing mavens, it's all about "brand recognition," as firms try to become the Kleenex or Xerox of design.

Firm names change all the time as partners retire, split up, or die. These changes may be required by law: Some states only allow the use of an architect's name to be used in the firm title if he or she is alive and associated with the firm. Mergers also create name reconfigurations that can resemble alphabet soup.

KCF-SHG, a prominent Washington, D.C-based firm, has gone through all such scenarios. Founded in 1956 as Keyes Lethbridge Condon, the firm became Keyes Condon Florance in 1975, and, in 1991, it recognized its new partners by changing to Keyes Condon/Florance Eichbaum Esocoff King, or KC/FEEK, which was simplified the following year to FEEK. In 1995, the firm name Keyes Condon Florance reappeared when the partners reshuffled and realized the firm name was no longer recognizable. In January, KCF's name changed again to reflect its merger with Smith Hinchman & Grylls Associates.

Other firms are making changes, however subtle, to improve their marketing and take on new challenges. Gensler, for example, a 32-year-old firm with offices worldwide, called itself Gensler & Associates/Architects until 1995. But that name, contends communications chief Barbara McCarthy, was "too limiting" and did not reflect the firm's range of services. Streamlining the name to just Gensler broadened the firm's appeal to potential retail, corporate, and entertainment clients, who need everything from graphics to real estate consulting.

While Gensler lopped off its name, other firms are adding on. HLM Design, a Charlotte, North Carolina-based firm with offices in 10 cities, has changed its handle twice in the past two years. Founded as Hansen Lind Meyer in 1962, the firm shortened its name to the snappier HLM in 1995 under new management. But in a profession rife with "H" firms—HOK, HKS, HDR, HNTB, to name a few—HLM did not stand out. Furthermore, HLM "did not define what we are and what we do," explains J. Rossi, the corporate marketing director. So the firm added "Design" to build its cachet.

All this self-consciousness could be related to the millennium, muses Roger Johanson of FJF (formerly Fayko Johanson & Fortier) of Rochester, New York, who says that architects, like many owners of large corporations (U.S. Airways, FedEx) are thinking critically about who they are and where they want to be after 1999. Like these companies, some architects hire consultants. When three partners of Sikes Jennings Kelly & Brewer of Houston left the firm, President Barry Moore sought the help of a specialist to rechristen the firm. After poring over 50 names and leafing through a trademarks directory, Moore simply reduced the name to the firm's initials, SJKB.

While potential clients may (subconsciously or not) factor a firm's name into their decisions about hiring an architect, Moore notes that firms build reputations on their completed projects. Changing the firm's name to Eggplant, "wouldn't much matter" to SJKB's clients, Moore claims. After all, does anyone remember what RTKL used to stand for? *Michael Maynard*

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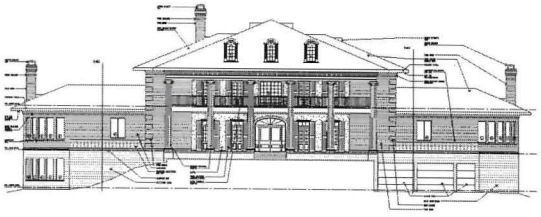

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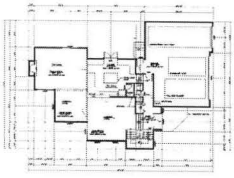

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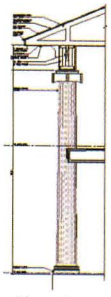

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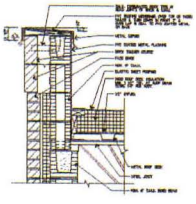
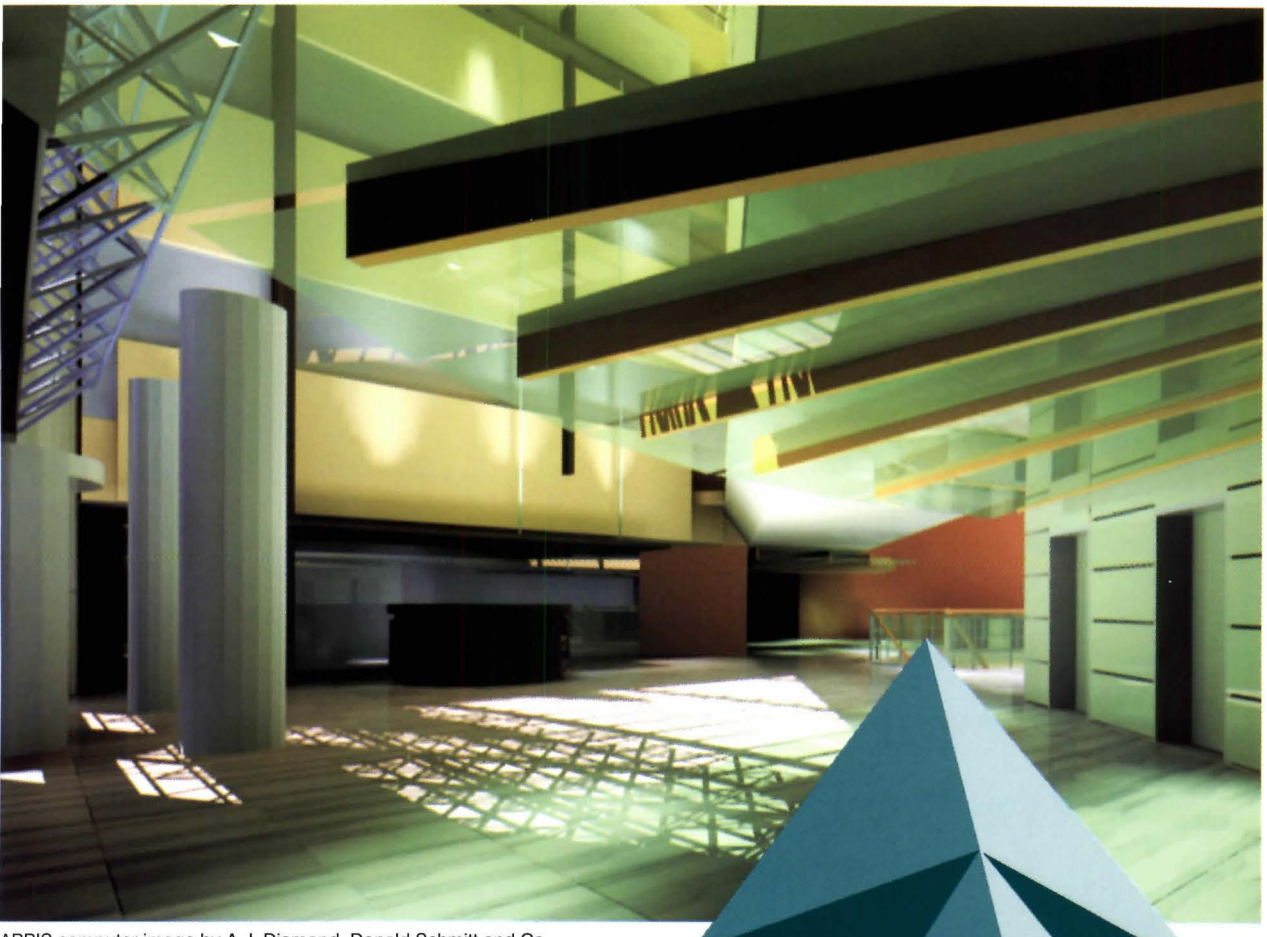


Details

Perspective



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